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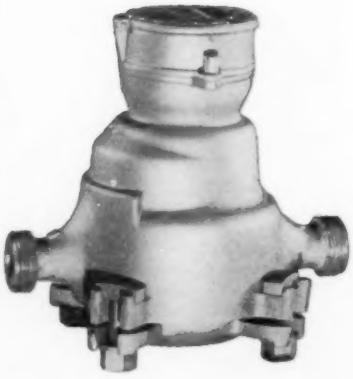
In Niagara Falls

Niagara Falls is one of the most beautiful natural wonders of the world. It is estimated that approximately 120,000,000 gallons of water are carried over these falls by the Niagara River every minute. This tremendous volume of water is more than enough to supply a city the size of Pittsburgh, Penna. for a period of twenty-four hours.

The City of Niagara Falls, N. Y. obtains its water supply from this river. Despite the fact that the source of supply is practically inexhaustible, this efficiently managed water department has effected savings in pumping and filtration costs through 100% metering. Pittsburgh Water Meters have been used by the City of Niagara Falls for many years.



PITTSBURGH EQUITABLE METER CO.

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When you write for the catalog, kindly mention THE AMERICAN CITY

Our Municipal Notebook

Modern Traffic Is Fast Traffic

ONE of the problems of safety engineering is to reduce accidents in the face of increasing hazard due to higher speeds of all kinds and without interfering with this naturally increasing tempo. Most drivers of motor vehicles are in a hurry, and cars are built to please. The normal automobile speed is increasing. Considerably higher speeds than those of a few years ago are now being criticized by public officials. For a time there will be much talk and some action toward reducing speeds. But the trend is toward higher speeds, and the clock seldom turns backward. The traffic engineer must study how to make fast driving safe. This means streets and roads well designed and constructed, well lighted, marked and equipped with clear standard signals, vehicles in good condition, and responsible drivers and pedestrians. Certainly it is not up to the traffic engineer to assume a return of the days that are no more; it is for him to use his knowledge, experience and ingenuity to fit the myriad units of flowing traffic to the faster rate of flow.

Theft of Current

NOT only the large commercial power companies, and especially those operating in industrial districts, but many municipal electric departments as well, are exercised over the increasing depredations of their customers by way of the meter. It is said that in many communities from 5 to 40 per cent of the consumers are stealing current. The known figure is 0.6 per cent. What a number of municipal plants are doing to prevent this meter jumping and tampering is described elsewhere in this issue.

Begging?

MAYOR LaGUARDIA'S decision to issue no more permits to street musicians, on the ground that New York should not exact license fees from men who depend on begging for their existence, raises a nice question. Certainly, grinding an organ from morning till night, day in and day out, and having to listen to the endless repetition of a cycle of stale tunes is harder labor than holding a box of pencils, shoelaces or gum, which obvious ruses are to be permitted. What is the moral difference between offering street music for sale at the customer's own price and other forms of selling? The reduction of street noise would seem to have been a shrewder reason to offer for abolishing these permits.

Behind the Curtains

AS long as the curtain is under complete control of the management, the play seems to go smoothly and few question the price of the tickets or the efficiency of the cast. But if, during an intermission, some restive person in the audience should slip behind the scenes and suddenly pull up the curtain, the disillusionment is likely to be as great as that which has attended the recent disclosures in the power industry. Electric rates were long known to be high. Now the Power Authority of the State of New York, the Federal Power Commission, and the New York State Legislative Committee, among others, have shown them to be *too* high. Early in March the Power Authority, in a special report to Governor Lehman, charged that of the Consolidated Gas property that is now on the books at $748,515,511 and on which a fair return is asked, 279 million dollars is "water." Possibly if the curtain could again be lowered, all holding companies might endeavor to set the scenes for a play nearer to the heart's desire of the public and the guardians of the public. But an illusion once shattered is difficult to repair. The little municipal plants springing up all over the country are capturing the public with a new form of drama at rates that are based on cost to produce.

The case for the holding companies is the case for the high executive. Operating companies are comparatively small units of business, and though each may be operating profitably unto itself, it becomes conceivable to some man of genius or greed that by pulling together as departments of a larger enterprise these operating companies, with lower rates to consumers, might show larger total profits than the present sum of individual profits. This wise man or group of high financiers purchases the controlling stock and makes a power system of these individual operating units. So far so good; it is progress. The remainder of the story depends on the character and motive of the organizers. Was it genius and public service or was it greed and exploitation? If the former, there are grounds for righteous protest against absorption, and evidence will be adduced of an integrity that not even the Government can shake. If greed was and continues to be the motive, then the system rests on shifting sands, and eventually the Federal Government will own and operate a nation-wide system of power generation, which the municipalities will distribute, that will furnish an earned income that will help pay the cost of government.

Any Better Risk?

TO those who believe that 27 billion dollars, the U. S. debt in 1934, is a great deal of money, the recent announcement of refunding bonds in the amount of $2,378,000,000 at 2⅞ per cent should be reassuring, for low rates are possible only where the credit is good. These are the 20-25 year bonds to be exchanged for Fourth Liberty bonds paying 4¼ per cent. Holders of the old faithful bonds who do not want the new issue will receive cash April 15. The new rate is said to be the lowest in 50 years. Either U. S. bonds are double gilt-edged or it is a case of, if not U. S. bonds, what?

Rough on Crooks

"MUSS 'em up," was the advice that New York Police Commissioner Valentine gave to his detectives in December, as reported in this magazine. One month ago two detectives and a battered man entered a coffee house in New York City, strode to a table where two men were sitting; then one detective punched one of the sitting men in the nose and the other detective punched the other man.

It seems that the two men punched had gone to the room of the man who was now battered and demanded that he pay $50 more on a loan of $75 on which he had already paid $100. He refused, and they mussed him up. Thus they now reaped accordingly.

There are different methods of mussing up; it depends on the animal. On March 2, discussing a drive to stamp out the numbers game racket and bail bonds fraud, Mayor LaGuardia said: "Most higher-ups appear to have political influence, and the politicians who are their friends are not my friends. It's going to go pretty hard against any captain who knowingly lets a policy game run in his precinct. The fur will fly fast if we catch 'em."

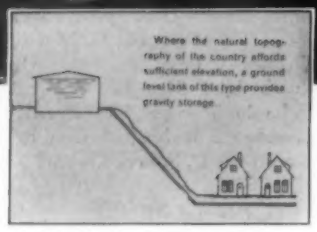
There is no substitute for direct action if it is not abused.

Alarm, Apparatus, Water

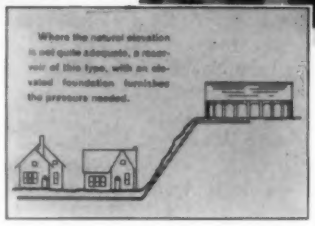
THE chain of circumstances in fire protection consists of three links: (1) the discovery of the fire and the notification of the fire department of where it is; (2) the size and effectiveness of the department as measured in men and apparatus; (3) the adequacy and reliability of the water supply. These three links should be watched equally; because, while the weak one weakens the entire system, the unusual strength of any one does not add materially to the effectiveness of the system.

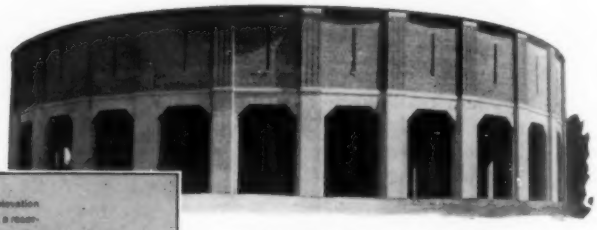
ELEVATED STORAGE TANKS

. . . . . to suit every topographical condition


Where the natural topography of the country affords sufficient elevation, a ground level tank of this type provides gravity storage.

600,000-gallon ground level tank installed at Parsons, W. Va.

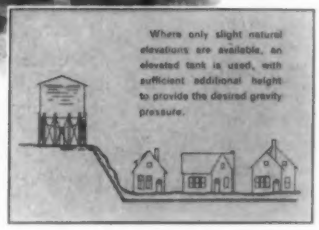

Where the natural elevation is not quite adequate, a reservoir of this type, with an elevated foundation furnishes the pressure needed.

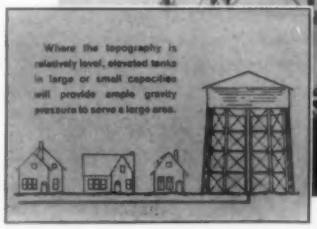


4,000,000-gallon welded steel tank on a concrete superstructure at Sheboygan, Wis. It provides gravity pressure for the entire waterworks system.

Below: 1,000,000-gallon elevated tank on 125-ft. tower at Newport News, Va.

1,000,000-gallon ellipsoidal bottom tank erected for the City of Bessemer, Michigan.


Where only slight natural elevations are available, an elevated tank is used, with sufficient additional height to provide the desired gravity pressure.


Where the topography is relatively level, elevated tanks in large or small capacities will provide ample gravity pressure to serve a large area.

THE advantages of elevated storage in municipal water systems have been recognized by cities large and small, in flat and in mountainous country. We have built many tanks of various types to suit these conditions.

As shown here, gravity water pressure may be provided by flat bottom tanks located on natural elevations, or elevated tanks to supplement or provide such elevation where it is not available.

Write our nearest office for information on elevated storage to meet your requirements.

CHICAGO BRIDGE & IRON WORKS

Chicago	2127 Old Colony Bldg.	Philadelphia	1616 "1700" Walnut St. Bldg.	San Francisco	1033 Rialto Bldg.
New York	3308-165 Broadway Bldg.	Boston	1501 Consolidated Gas Bldg.	Houston	2919 Main Street
Cleveland	2236 Rockefeller Bldg.	Birmingham	1502 N. Fiftieth Street	Tulsa	1625 Thompson Bldg.
Detroit	1501 Lafayette Bldg.	Dallas	1406 Dallas Athletic Club Bldg.	Los Angeles	1403 Wm. Fox Bldg.

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Do you mention THE AMERICAN CITY? Please do.

Water Supply and Purification

Adjustments in Water Bills

A HYPOTHETICAL case which admirably illustrates the procedure of most progressive water departments in making adjustments on water bills was presented by W. S. Patton, of the Ashland, Ky., Water Works, before a meeting of the American Water Works Association, as follows:

"Our consumer comes into the Water Works office with a bill three or four times as large as the average. To her knowledge there has been no leakage in the plumbing. Every care has been exercised in the use of water and she wants to know what we can do about this large bill, because it is more than she can afford to pay.

"At our plant we first make a careful check. We get another reading of the meter and we watch the test hand on the meter while all outlets are closed. After satisfying himself that there is at present no leakage, our investigator questions some member of the household to ascertain whether any repairs have been made in the plumbing. Suppose that he finds no evidence of leakage, and no plumber has been called in recently, then he examines the water closets, flushing each closet a number of times to make sure that the valve closes each time. Often he will find a water closet that shuts off most of the time, but sometimes fails.

If we can find the cause of excessive consumption, the consumer is generally willing to pay the bill, but it sometimes happens that the consumption is abnormally large and yet there is no apparent reason. In cases of this kind, the consumer should be required to pay the bill. In cases where water has been lost by underground leakage, and where the consumer was not negligent in any respect, then an adjustment should be made in the amount of the bill.

"Great care should be exercised in authorizing reductions in water bills. I have always thought that underground leaks were the only kind that should entitle consumers to a reduction, but it sometimes happens that a consumer will unwittingly incur such a large bill that it becomes an unbearable hardship. In cases of this kind some kind of relief should be available."

Strengthening Distribution Systems

THERE has been no marked change in practice with reference to the development of distribution systems in the past year or two, though certain new influences are making themselves felt. The drought years have emphasized the importance of adequate feeder mains. During these drought years great volumes of water were used for irrigation, which taxed distribution systems to the utmost. Weaknesses of distribution systems were thus brought out, and many cities in the past few years have developed programs for the strengthening of the distribution systems to meet peak demands. These heavy draughts on distribution systems have also emphasized the value and economy of elevated storage in meeting peak demands, and many cities that have hitherto not had elevated storage have adopted it and others have increased their elevated storage. Perhaps the most notable case of the adoption of elevated storage is in Detroit. Indianapolis and Evansville, Ind., and Columbus, Ohio, also have recently adopted elevated storage. The feasibility of using elevated storage has been expanded by improved design for large elevated steel tanks.

—From a paper presented by PAUL HANSEN, of Greeley & Hansen, sanitary engineers, Chicago, Ill., before the International Association of Public Works Officials.

Applying Water-Works Chemicals

NONE of the features embodied in modern water-works purification plants can be regarded as revolutionary, yet the last five or six years have resulted in a number of improvements in detail. The designer of today puts much more thought into the chemical preparation and feed devices than was done a few years ago. More space is devoted to the chemical feed equipment, and piping arrangements are more carefully designed, all with a view to securing greater accuracy of application, greater flexibility in point of application, and better control of dust and fumes.

For example, a modern water purification plant, not including softening, should comprise the following facilities for chemical preparation and application.

1. Dry feed machines in duplicate or multiple for the application of alum, ferrous sulphate, ferric sulphate, or sodium aluminate.

2. Machines in duplicate or multiple for the application of lime. The lime may be used in conjunction with ferrous sulphate, or it may be used to provide necessary alkalinity in connection with the use of alum. It may also be used to remove carbon dioxide from the filtered water for the correction of corrosion in pipes.

3. Machines for the application of activated carbon in powdered form. These machines should be in duplicate or multiple and should be so arranged that the carbon may be applied at various points in the preliminary treatment of the water. Activated carbon is extremely dusty, and these machines, as well as the carbon storage, must be enclosed in dustproof compartments.

4. Machines for the application of chlorine and ammonia. Chlorine is almost universally applied as a gas. The chlorine machines should be placed in a separate room with a special ventilating fan so that in case of chlorine leakage the room may be independently ventilated. Ventilating fans should have remote control. Ammonia may be applied either in the form of anhydrous ammonia or as ammonium sulphate. In the former case, equipment similar to chlorine feed machines is used, and in the latter case dry feed chemical machines may be used. The chlorination and ammoniation equipment should be so arranged that there may be prechlorination and ammoniation of the raw water, and post-chlorination and ammoniation of the filtered water. In some cases it is desirable to apply the chlorine and ammonia at some intermediate point.

Chemical feed piping should be as short as possible and so placed that it can readily be removed for cleaning. Rubber tubing is desirable for the longer runs, inasmuch as this may be easily removed and the incrustation within may be broken by simply walking on it. It is desirable to have an open inlet flume in which the chemicals are applied to the raw water. This permits of easy accessibility and also permits the operator to observe the mixing of the chemicals. Further, it permits of application of chemicals in any order deemed desirable by the operator by simple re-arrangements of the chemical piping.

Probably no part of a purification plant is so frequently modified as the chemical treatment. It is therefore desirable to so arrange the chemical application devices that they can be changed from time to time. It is also well to provide space for the erection of cheap chemical solution tanks for the purpose of trying out experimentally some new chemical treatment.

ACKNOWLEDGMENT.—From a paper presented before the International Association of Public Works Officials by PAUL HANSEN, of Greely & Hansen, sanitary engineers, Chicago, Ill.

Caustic Soda for Removing Iron from Filter Sand

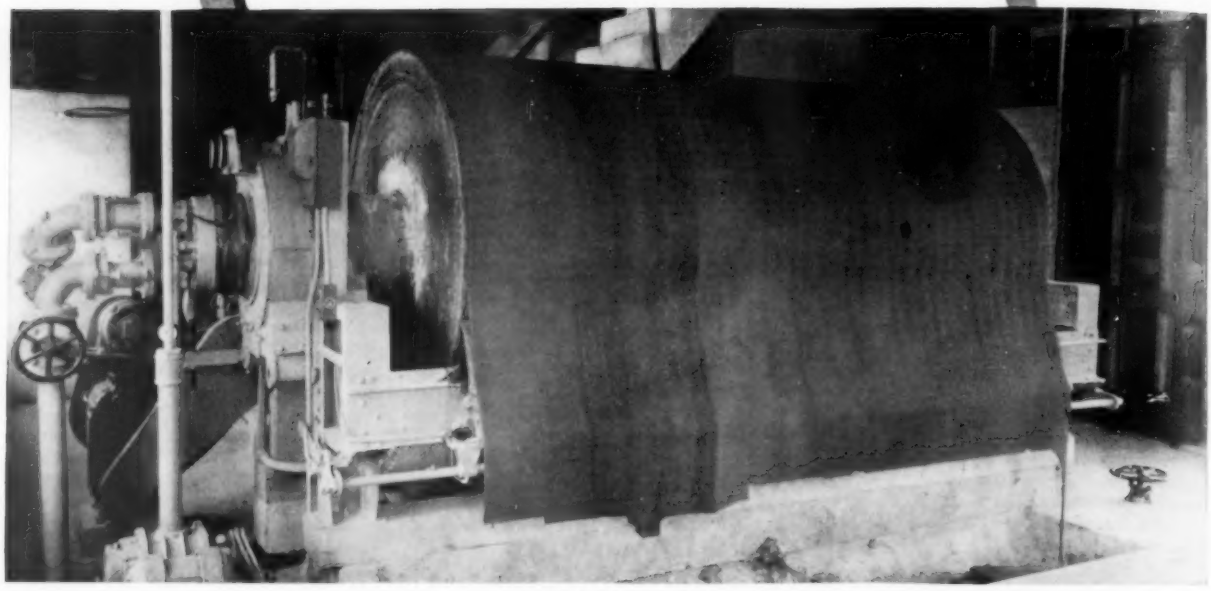
FOR some time we have been discussing and communicating with people regarding methods of cleaning the sand of the water filters in Battle Creek, Mich. The sand has been covered with a deposit of iron and some other substance which cemented the iron firmly to the sand. The sand became so bad that we were obliged to buy a carload for two of the filters, and the third one has lately caused so much trouble that we finally decided to use caustic soda, leaving the soda solution in the sand for 24 hours.

The result was complete success, and the method proved to be much cheaper and better than any other considered. The sand is cleaned perfectly, except for a little harmless discoloration.

I thought perhaps some of the readers of THE AMERICAN CITY would be glad to know that caustic soda will do the work properly, although about half the replies we received said that caustic soda was not at all good for this purpose.

W. W. BRIGDEN,
Superintendent and Engineer, Water Department.

2 PROBLEMS— Seen and Unforeseen



Solved by Experience and Knowledge

The filter shown above is the Oliver Continuous Mechanical Sludge Dewaterer recently installed at Oklahoma City, Oklahoma. It was sold on the basis of preliminary test operations in a pilot plant. But when large scale operations began it was found that the sludge proved to be entirely different in character than that produced in the pilot plant. Naturally, the filter operation was quite at variance with the results to be expected from the tests.

An Oliver United engineer working in close co-operation with the municipal authorities at Oklahoma City revised the filter operation to the entire satisfaction of all concerned.

Sanitary Department

OLIVER UNITED FILTERS INC.

33 West 42nd St.
New York, N. Y.

221 N. LaSalle St.
Chicago, Illinois

351 California St.
San Francisco, Calif.

Sewage Works Problems

Salina, Kans.

WE operate both coarse and fine screens at the Salina sewage treatment plant. The average daily weight of screenings removed is about 100 pounds per million gallons, which is the average daily flow. These screenings are stored in a concrete bin and are disposed of by burying, at least three times a week in summer months and twice a week for the rest of the year. We feel that while our method is reasonably satisfactory, incineration is the best method of disposal.—H. N. LAMME, City Engineer.

Wichita, Kans.

NO fine screens are used at the sewage treatment plant in Wichita. Vertical bar coarse screens with Link-Belt cleaning mechanisms are used. Although a considerable volume of screenings is collected from the 8.5 million gallons of sewage flow daily, no record is kept of the quantity. The screenings are disposed of by incineration, which is considered the best method of disposal.—P. L. BROCKWAY, City Engineer.

Baltimore, Md.

AT the Back River sewage works of Baltimore, we operate only coarse screens with ⅞-inch clear openings, which collect approximately 1½ cubic feet of trash per million gallons. The average daily flow during 1934 was 79 million gallons.

Baltimore was fortunate in being able to sell the screenings to a neighboring farmer for 25 cents a load. Plans are under way, however, to dispose of the screenings by macerating them and discharging the fine material back into the screened sewage.—GEORGE E. FINCK, Sewerage Engineer.

Phillipsburg, N. J.

WE use both coarse and fine screens to remove material from the raw sewage. The coarse screens are bar screens, and the others Dorr screens. About 12 cubic feet of screenings per million gallons is removed from our average daily flow of 900,000 gallons. The screenings are disposed of by burial, but we believe the best method of disposal is by incineration.—H. W. MIXSELL, Town Engineer.

Butler, Pa.

COARSE material is removed from the raw sewage with a 1-inch bar screen with a mechanical cleaner. This device removes about 2½ cubic feet of screenable material per million gallons of sewage flow. The average daily flow in Butler is 1.75 million gallons daily. The screenings are disposed of by burial, but incineration is preferred from the sanitary standpoint.—FRED M. HARPER, City Engineer.

The Questions

Sewage Screenings—Their Disposal

What kind of screens do you operate?
What volume or weight of screenings do you remove per million gallons of sewage flow?
What is the sewage flow?
How do you dispose of the screenings?

Here are some answers.

New Haven, Conn.

AT the New Haven sewage treatment plant a Link-Belt coarse screen removes trash from the raw sewage. There is no fine screen. The coarse screen removes about 3 cubic feet of material per million gallons of sewage flow; the flow averages 8 to 9 million gallons daily.

Screenings are thrown onto meadow land and covered to a depth of 10 to 12 inches with sand. While this method of disposal has proved satisfactory at New Haven, it is felt that incineration would be a more sanitary and positive method of disposal.—EDWARD S. NETTLETON, City Engineer.

Walla Walla, Wash.

WE operate coarse screens with a 1-inch mesh and a secondary screen of ½-inch mesh to protect the sprinklers on the filter beds at the sewage treatment plant. The volume of screenings varies between 1½ and 2½ cubic feet per million gallons of sewage, with an average of about 1¾ cubic feet. The average daily flow at the plant is 3,100,000 gallons.

The screenings are disposed of by incineration, using gas from the digestion tanks as fuel. This has given very good results, since the only residue is a very fine ash.—R. F. MCLEAN, Superintendent.

Hagerstown, Md.

AT the new Hagerstown plant we operate both fine and coarse screens. Approximately 80 pounds of screenings are removed per million gallons by the fine screens, and 12 pounds per million gallons by the coarse screens, on a dry weight basis. The average daily sewage flow at Hagerstown is about 2,400,000 gallons.

The coarse screenings are buried, and the fine screenings are mixed with the sludge and filtered on the vacuum sludge filters. This method has been entirely satisfactory to date.—S. L. GREENAWALT, City Engineer.

Boston, Mass.

BOSTON is particularly well situated in regard to disposal of sewage. Because of its large harbor with 10-foot tides and tributary rivers, sewer effluent is quickly diluted and dispersed with very little evidence of pollution. The North and South Metropolitan Systems, which serve portions of the city together with surrounding areas, discharge continuously through multiple outlets in deep water. The Main Drainage System sewage from the remainder of Boston, is pumped to storage basins at Moon Island and is discharged on the outgoing tide. No treatment other than coarse screening is used in any case.

The following notes apply to the main drainage system, which is under direct charge of the city. The screens are of the cage type, raised periodically for cleaning, with sides and back formed of ¾-inch diameter round rods, spaced 1¾ inches on centers. Approximately 13.26 pounds of screenings are removed per million gallons pumped. A total of 100 million gallons daily is pumped by the main drainage system.

The screenings are pressed to remove surplus liquid, and the resulting "cheeses" are wheeled to a dump to dry. When they are sufficiently dry and when wind and weather are favorable, they are burned. On account of the isolated location of the pumping station, this can be done without serious odors.

This method of disposal is probably as cheap and as satisfactory as any under present conditions. If the surrounding area should become built up in the future, it might be advisable to grind up the screenings, mix them with the screened effluent and discharge them through the present outfall, which is located well down the harbor.—GEORGE W. DAKIN, Division Engineer, Boston Sewer Division.

Bloomington, Ind.

WE are at present building a new sewage treatment works and expect any day to turn in the sewage. The plant includes two bar screens with mechanically operated cleaning rakes and a conveyor system for removing and transporting the screenings to an incinerator unit. The incinerator is fired with gas collected from the separate sludge digestion units. Ash-handling equipment is also provided. The relatively small amount of ash will be wasted as fill in established areas on the plant grounds.

The bar screens are designed for flows of from 2.0 to 10.0 mgd, with an ultimate average dry weather flow of 3.75 mgd.

As a result of observations of the experience at other plants with a comparable problem, the general method of screenings disposal developed for this plant is believed to be entirely practical.—CARL B. CARPENTER, Superintendent, Department of Sewerage and Sanitation.

COMPLETE LINES OF TIRES FOR EVERY CONSTRUCTION SERVICE AT LOWEST PRICES—GIVING LONG MILEAGE AND GREATEST ECONOMY

FIRESTONE pioneered the ship-by-truck movement in 1918, and ever since has consistently led in anticipating every requirement in the design and construction of truck and bus tires for every transportation condition. To accomplish this, Firestone has consistently followed the fundamental principle of its founder and active head, Harvey S. Firestone, "Always to find the way to build tires better than anyone else."

While there are many reasons why Firestone Tires are safer and more economical, there are two reasons that stand out above all others. One is Gum-Dipping; and the other is two extra layers of Gum-Dipped cords under the tread.

By Gum-Dipping, every strand in every cord is soaked in liquid rubber, preventing friction—adding extra strength and long mileage. By having two extra layers of Gum-Dipped cords placed between the tread and cord body, it is practical to use a tread with higher, more rugged shoulders and a deeper non-skid with flatter contour.

All this provides more rubber on the road, giving longer wear, greater traction and quicker stops. These two extra construction features are patented and used only in Firestone Tires. Take a forward step in maintaining schedules and reducing operating costs. Call on the Firestone Service Store or Firestone Service Dealer today.

Firestone
HIGH SPEED TYPE
Greatest tire ever built for all-round service.

Firestone
OLDFIELD TYPE
The tire that taught thrift to millions.

Firestone
SENTINEL TYPE
Volume production tire for light trucks.

Firestone
GROUND GRIP TYPE
Super traction tire for unimproved roads.

★ ★ ★ ★ ★ *Listen to the Voice of Firestone—featuring Richard Crooks, Gladys Swarthout, or Nelson Eddy—every Monday night over N.B.C.—WEAF Network . . . . . A Five Star Program*

AUTO SUPPLIES FOR TRUCKS AND BUSES

FIRESTONE TRUCK TYPE BATTERIES

FIRESTONE HEAVY DUTY SPARK PLUGS

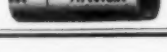
For quick starts and longer mileage.

FIRESTONE BRAKE BLOCKS and HEAVY DUTY LINING

For better braking control.

FIRESTONE FAN BELTS

FIRESTONE RADIATOR HOSE



Firestone

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Engineering and Highways

Asphalt Standards Reaffirmed

THE National Bureau of Standards, through its Division of Simplified Practices, has announced that Simplified Practice Recommendation R4, Asphalt, has been reaffirmed, without change, by the standing committee of the industry. The recommendation, which covers the penetration limits of paving asphalt, first became effective January 1, 1924. It was reaffirmed and reissued in 1926, and again reaffirmed in 1928, 1930 and 1932.

The recommendation is being reprinted, and until the new edition becomes available, mimeographed copies may be obtained without charge from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

Street Repair Organization in Akron, Ohio

PROBABLY no subdivision in the Department of Public Service in Akron is in closer contact with the public than the Street Repair Division. It is a branch of the Engineering Division and consists of a superintendent, his staff of district engineers and a crew of workmen, skilled in their respective trades. It is the duty of this organization to keep streets in repair, to maintain and repair bridges, culverts, ditches, guard-rails, and street signs. It also devolves upon this Division to issue permits to public utilities and individuals for opening streets, in order to construct or repair underground structures and sidewalks.

The Street Repair Division is wholly supported by the city's share of gasoline tax and motor-vehicle license taxes. Since January 27, 1933, however, practically the entire proceeds from the gasoline tax have been appropriated for hospitalization and poor relief. Since there are 750 miles of streets in the city of Akron, 321 miles of which are paved, it has been impossible to provide the complete service which characterized the efforts of the Department in former years.

During the first ten months of 1934, an average of 150 men were employed. Not less than 211 carloads of materials, such as stone, sand, cement, asphalts, tar, road oils and paving brick, were used during that ten-month period. In addition, over 45,000 cubic yards of cinders were used to keep cindered streets in condition. The cost of operation for this period was $180,618, of which $79,127 was for labor and $91,878 for material, which includes material used on FERA jobs, for which labor was furnished free, and $9,613 for equipment.

In a recent monograph prepared for the daily papers of Akron, the above organization was outlined and the addresses and telephone numbers of the various offices were given and the following plea was included: "Citizens will confer a favor by reporting dangerous holes in streets or walks, catch-basins stopped up, street lights out, and other danger signs."

G. SODERBERG,
Street Repair Division.

Who Uses the Streets?

DID you ever stop to consider that even if there were no automobile or motor-truck traffic, or even horse-drawn vehicles, the streets of our cities would still be needed and utilized for a large number of services. Major F. Britton, Director of the National Highway Users Conference, has listed these services as follows:

1. Pedestrians.
2. Electric railways.
3. Electric conduits, wires and poles.
4. Telephone conduits, wires and poles.
5. Gas mains.
6. Underground water pipes.
7. Drainage structures and channels.
8. Sewage system.
9. Fire-fighting apparatus.
10. Fire-breaks or barriers.
11. Police protection.
12. Rubbish, ash and garbage collection.
13. Emergency ambulance, medical aid, etc.
14. Means of access of light and air to adjoining buildings.
15. Means of beautification when parked or boulevarded.

The Service of Municipalities

MUNICIPALITIES are the catch-all of public works. From the point of view of national operation they are the "moppers-up" of public service, performing the more detailed and more intimate service functions essential to everyday living, and rounding out services begun on a broader scale by the Federal Government and by states. The range of municipal public works is almost too generally well-known to require enumeration. It includes streets, parks and parkways, playgrounds, water, sewage and waste removal and disposal, schools, protection of life and property, and many special improvements and services, including port development, airports, flood control, provision of public gathering places, libraries, and art museums, and, in frequent instances, the operation of public utilities, including gas and electric service and rapid transit and street railways.

—From "Criteria and Planning for Public Works," a research report of the National Resources Board prepared by RUSSELL V. BLACK, Research Consultant.

Weed Cutting

DURING the early summer of 1934, the highway forces of Upper Darby Township, Delaware County, Pa., faced the problem of cutting weeds on vacant lots, an activity which had formerly been handled by another department. The owners of vacant ground overgrown with tall grass and weeds to such an extent as to be a menace to public health were given five days' notice to clear the lot. At the expiration of that time the Highway Department cut the grass and weeds and billed the owner with the labor cost plus 10 per cent. If the bill was unpaid, a municipal lien was placed against the property. To expedite this work, a Rawls-Detroit Harvester Model 2M motor scythe was purchased. This machine has a 36-inch blade, and under proper conditions one man can do as much work with it as six men can do with scythes. Brush-hooks and scythes were used on the more stubborn growth.

A total of 3,122 man-hours was used on this work, and it was continued until the first heavy frost. An earlier start will be made next year so that the growth can be kept under control with less labor.

SAMUEL H. WALKER,
Chairman, Highway Committee, Upper Darby Township, Pa.

A CATERPILLAR DIESEL SEVENTY-FIVE AND A 12-YARD SCRAPER WORKING IN DEEP SAND AND BLINDING DUST TO COMPLETE THE GRADING OF FANCHER FIELD, THE NEW MUNICIPAL AIRPORT AT WENATCHEE, WASH.

Important News Flash!—

Seagrave Presents

THE WORLD'S NEWEST AND FINEST FIRE ENGINE MOTOR

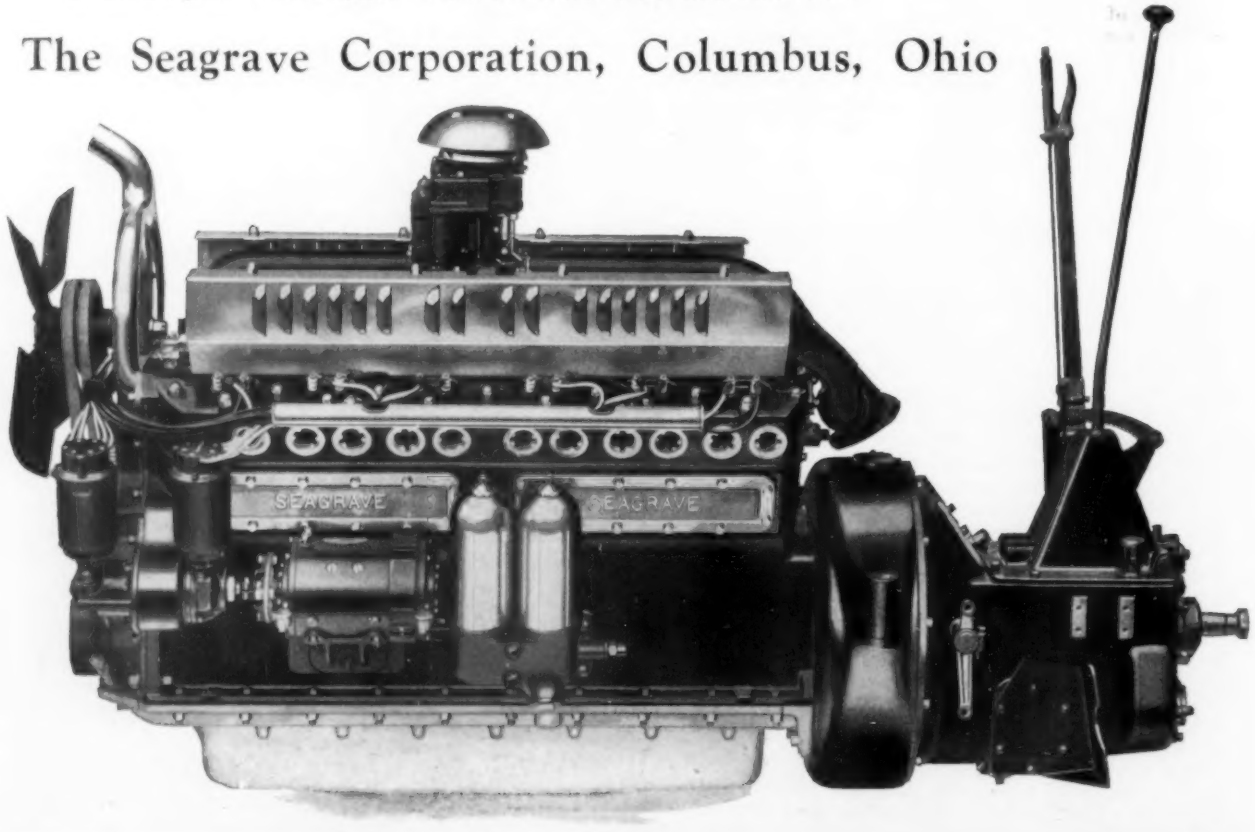
The Seagrave V-12

The world's fastest seaplane—
The world's fastest motor boat—
The world's fastest automobile—
The world's fastest railway train—
all use the V-type engine

And now Seagrave has adapted this more powerful type of engine with its smoother performance, quicker get-away and longer life to a new use—fire-fighting—after a long period of experimentation and research followed by exhaustive tests. Every sort of operating condition was considered as the testing was continued through hundreds of hours on the testing block and thousands of miles on the road during winter and summer. The result is a machine that not only gives the greater power and smoother performance inherent in its additional cylinders, but also has the supremely important advantages of greater compactness, greater rigidity and greater accessibility for servicing.

At this particular time, when so many city fire departments are waking up to the fact that their equipment has become antiquated, or worn out, or both, Fire Chiefs, Mayors, City Councils and townspeople in general are demanding *something better. And here it is!* Write now for a copy of the *Seagrave V-12* booklet. You are bound to be interested in it!

The Seagrave Corporation, Columbus, Ohio



Refuse Disposal and Street Cleaning

The Collection of Refuse in Manchester, England

THE whole of Manchester, England, is divided into a complete schedule of house-to-house calls, whereby every dwelling house, institution or other premises in the cleansing district receives regular attention at a specified time on a specified day of each week. Generally speaking, collection of refuse is made at least once a week, the weekly calls being more than 223,000.

Disposal is by incineration, separation and incineration, land reclamation, sales to farmers, and controlled tipping. Where incineration alone is used, the refuse is delivered to a central depot and after a very elementary separation of metals, brickbats, etc., is burnt in forced-draught destructors equipped with boilers, for the generation of steam power. Where separation and incineration are combined, the refuse is treated by machinery designed to separate it automatically into various parts; first, to divide it into burnable and unburnable elements, and, secondly, to extract such components as dust, cinders, metals, etc., with a view to future utilization. The separation plant process of disposal has a number of advantages over the incineration method, the chief of these being: abolition of night work; improvement in working conditions, and practically dustless operation; treatment of refuse almost wholly mechanical and hidden from view; salvage of salable materials contained in the refuse made easy and efficient; and more economical working assured. In the land reclamation process, the collected refuse is taken immediately out from the city and plowed under to improve barren land.

The controlled tipping process of disposal has received considerable attention in Manchester. To cart refuse to the nearest available open space, there to dump it in its rough state, is obvious. Crude tipping on land within the city is unsightly and not in the best interests of health. In recent years, however, another form of tipping has been evolved known as "controlled tipping," which in many cases is neither more nor less than land reclamation.

These four main methods of refuse disposal are responsible for 246,716 tons of the total of 252,140 tons of refuse collected annually, the remaining 5,424 tons being accounted for by drainage; evaporation between reception at the depot and final disposal, 3,507 tons, and salvaged material such as concentrated manure, fats, size, etc., 1,917 tons. This particular form of salvage is mainly carried on at a plant on the northeastern side of the city. An extensive salvage plant is installed, and here the "Manchester Corporation Patent Manure" is manufactured, a fertilizer known all over England. Meat meal for poultry feeding is also made, and fats and size are extracted as residuals and sold.

—From a book, "How Manchester Is Managed," published by the city of Manchester, England, 1934.

"SHE LOVES ME—SHE LOVES ME NOT—SHE LOVES ME—"

THE OLD TYPE OF GARBAGE COLLECTION WAGON USED IN ST. LOUIS, MO.

THE PRESENT TYPE OF TRUCKS WITH COVERED BODIES

Begin Now to Build Up Your Fire Alarm Box Distribution

EVERY city should follow a planned annual program for maintaining adequate fire alarm box distribution by purchasing a definite number of fire alarm boxes each year.

To accomplish this, every fire chief should first make a survey of his existing system by plotting out the locations of his present boxes on a map of his city and also marking those locations where additional boxes are urgently needed. A check up on all obsolete boxes should also be made and then a definite plan laid down to replace a certain number of such boxes each year and add a few new ones so that at the end of a ten year period, the entire system will contain an adequate number of boxes on the streets—all of a modern type.

After your needs have been determined in this manner, you should put a figure in your budget large enough to take care of the purchase and installation of these boxes. Many cities have suffered during the past few years because of reduced appropriations; but, now with business picking up and tax collections improving, you should lay definite plans to start building up your fire alarm box distribution again on a planned basis, so that the efficiency of your fire department will not become too seriously impaired.

We have an interesting booklet "Planning Fire Alarm Box Distribution for Fifty Years," that should be a real aid to you in planning your fire alarm requirements. A copy will be sent to you on request.

THE GAMEWELL COMPANY

NEWTON, MASSACHUSETTS

"A Box A Block"

Public Safety

Interconnect Transmitters for First News of Crime

THE use of police radio individually by municipalities and counties in metropolitan areas loses the value of speed because the police movements are restricted to political boundaries while the lawless escape over these lines, to freedom or to more costly detection, apprehension and prosecution.

Some American cities in congested areas have adopted systems of telephone or teletype between the various police headquarters only. The telephone, though better than nothing, is slower and lacks the very desirable permanent record afforded by the teletype, and both require further delay in getting the information out to the men on patrol who actually make the arrests. Other cities have joined in the mutual use of one radio station, equipping all their cars with receivers through which the calls of all must be heard.

This plan has limitations. For technical reasons it precludes the use of two- or three-way radio. The number of cars and calls at peak traffic, and the chance of confusion and delay because of the number of hands through which such information must pass, defeat the element of speed.

These defects can be overcome and greater speed attained in coordinating the work of a group of police departments when the need arises, by interconnecting or connecting together the transmitters of the various stations by means of land wires, when an emergency comes that is of concern to all. Thus the dispatcher located in the town where the event happens preempts and uses all the transmitters for the broadcasting of his urgent news, and his voice reaches all police cars of these communities.

It is possible that a pre-signal of ten seconds will be necessary, in order to allow the manual disconnection of such preemption by a station already having a local emergency. Tell-tale signals would warn the preempting dispatcher that this particular station was out, and he would re-broadcast there later if need be.

Details of such a plan will vary with the localities involved. Definite agreements of inter-municipal participation will have to include precise limitations of priority. The land wires may be installed and maintained by the municipalities, or they may be rented from the telephone company or similar utility. The plan will permit the individual choice of the type of radio deemed best for the municipality's own peculiar conditions, for it is merely placing the voice at a remote point via the land wires, and works equally well on one-, two- or three-way radios, irrespective of type and manufacture. The required voice level for any transmitter may be obtained by the insertion of the necessary amplifying apparatus.

The practice itself is not new, having been tested in other fields, such as aviation, coastal and commercial broadcast services. Its very successful counterpart is found in the municipal fire-alarm systems that have been interconnected in suburban Boston for the purpose of mutual helpfulness in fire protection.

In addition to removing causes of delay, confusion and error, the land wires provide for a rapid exchange of fingerprints, photographs, signatures, handwriting. A fire chief could be at the scene of a large fire and yet remain in touch with his headquarters, be aware of any other fires occurring, be able to request and locate out-of-town help.

In view of the remarkable interest of non-technical municipal officials in police radio, a definition of one-, two-, and three-way radio is here quoted from the recent report of the Legislative and Police Radio Committee of the New Jersey Municipal Signal Association.

One-way police radio communication is where a transmitter is operated from headquarters and police cars equipped with receivers only. Hence, the radio messages may go in one direction only, from station to cars.

Two-way is where headquarters and cars are equipped with both transmitter and receivers but of different frequencies; hence, messages may be sent from station to cars, and vice versa, but not from car to car.

Three-way is where headquarters and cars are equipped with transmitters and receivers, but all of the same frequency, thus permitting messages from station to cars, cars to station, and cars to cars.

It is obvious that the number of cars capable of communicating with the station without interference or confusion is limited. In larger cities, two-way may be accomplished by establishing several different frequencies for car transmitters, segregated into groups or precincts, each of the latter equipped with a receiver of the same frequency assigned to the car transmitters in it. Thus all cars could receive headquarter's broadcasts only, and send messages to their precinct receiver only. The cars or station and receiver of one precinct could not communicate with the cars or station receiver of another precinct. Such an application may be defined as a limited or two-way system.

W. H. JORDAN,
City Electrician, East Orange, N. J.

The Young American Fire Preventers, Inc.

ABOVE is the name of a boy organization founded in September to reduce fire hazards. Fred L. Shaw, National Director, 544 Buhl Building, Detroit, reports that it is growing rapidly in his area, that it will be adopted by Denver, and that other cities are interested. The unofficial godfather is Chief Frank W. Kuhn of Pontiac, where 200 boys meet regularly at the fire stations. The idea is that there are thousands of fire stations that might serve as clubhouses. "Saving lives and property," slogan.

Catching Modern Criminals

THE great problem of a law-enforcement officer is not that of apprehending the men and women who have offended against the statutes of our country. The difficulty lies in reaching a position from which capture is possible.

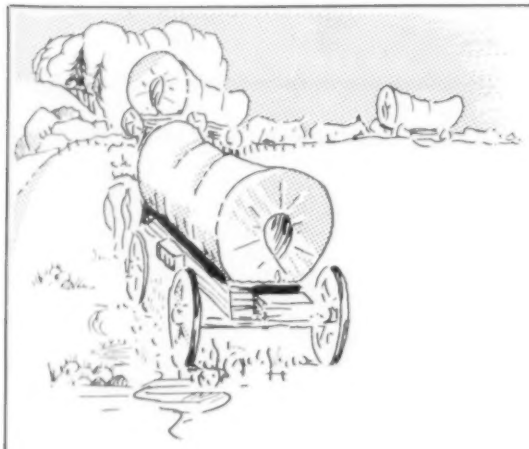
A barbed wire entanglement of various factors confronts the man who would hunt down a criminal. Primarily, there is the maze of politics, ranging from the vote-getting influence of a resort owner, which sometimes encompasses life and death, to the man who controls the election destinies of a crime-ridden city. There is the impediment thrown up by well-meaning but non-thinking folk who believe that crime is none of their business, and that it is not their duty to aid those entrusted with the task of law-enforcement. There is the morass of ineffectual laws, many of them created in legislatures by those directly concerned with the fortunes of the criminal.

To all this must be added the codes of the underworld, demanding that each enemy of society give aid to the other. There is the vast maze of hide-outs, tuck-aways, apartments, hoodlum hotels and hoodlum camps where wanted men may be sheltered for a price and no one be the wiser. There is the tremendous army of crime-supporters, the hangers-on who live by pandering to the most vicious enemies of society. And there are the attorneys who not only aid, abet, solace and strive to free the law violator after he is caught, but who often advise him, consort with him and sometimes plan the getaway by which he can avoid being caught. All this is a primary barrier; a handicap which too many honest persons take for granted. Once a law-enforcement officer has struggled through this, he may take up what should be the only true problems of a criminal's pursuit and apprehension.

It must be understood that the work of this Division does not signify an attempt to usurp the law-enforcement powers of state, county or city. There is nothing which can take the place of local forces properly equipped to deal with local crime. However, day by day, crime is laughing at localities. I have in mind an instance in the life of the unlamented John Dillinger, who left a hide-out in Florida one day, robbed a bank in Indiana the next afternoon, tucked a wounded comrade away in a hide-out apartment in Chicago the day following, and within 24 hours was carousing with his gang in Tucson, Ariz.

To combat such mobility, there must be an equal flexibility of pursuit. This can be accomplished only through absolute coordination of Federal, state and local enforcement agencies, all working to a common purpose and all properly equipped for a grim battle.

—By J. EDGAR HOOVER, Director, Division of Investigation, U. S. Department of Justice, from the Foreword to Ten Thousand Public Enemies, by Courtney Ryley Cooper.



The "COVERED WAGON" of today is different!

Instead of keeping the rain and dust *out, today's* covered wagon keeps garbage, dust and odors *in.*

Today there are various covered wagons on the market for the sanitary and odorless collection of garbage.

But it has remained for the Marion Steel Body Company to manufacture one that, through its peculiar construction, *effects substantial savings in garbage collection costs.*

The MARION truck body is of the compression type. A simple device compresses the load, squeezing out the fluid content into a 110-gallon container located underneath the body. This means greater load-carrying capacity, because the total load, 6 cubic yards compressed, is equivalent to 12-15 cubic yards of loose refuse—and this means, of course, fewer hauls and greatly reduced collection expense.

Mount the MARION REFUSE COMPRESSOR on any 1½, 2 or 2½-ton truck.

Write for Circular

Manufactured Exclusively by

The Marion Steel Body Company, Marion, Ohio

Patents applied for.

APRIL, 1935

Vol. L, No. 4

The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

The George Rogers Clark Memorial

By WILLIAM E. PARSONS
Bennett, Parsons & Frost, Architects, Chicago

ONE HUNDRED FIFTY-SIX winters have passed since Colonel George Rogers Clark, leading a force of 180 Virginia troops, crossed the flooded country from Kaskaskia to Vincennes and wrested from the British in a surprise attack the military post of Fort Sackville. By this achievement, the great region between the Alleghenies and the Mississippi fell into American possession, so that in the Treaty of 1783 this region, known as the Northwest Territory, became a part of the United States.

In belated recognition of Clark's services, Congress seven years ago established the George Rogers Clark Sesquicentennial Commission for the purpose of constructing on this site of Fort Sackville in Vincennes, Ind., "a permanent memorial commemorating the winning of the old Northwest and the achievements of George Rogers Clark and his associates in the war of the American Revolution." Senator Simeon Fess is Chairman of the Commission, and Hon. D. Frank Culbertson of Vincennes is the Vice-Chairman.

The site of Fort Sackville lies on the east bank of the Wabash River in the southwestern corner of the old city of Vincennes. The various properties occupying the site,

By courtesy of the 309th Observation Squadron, U. S. Air Corps Reserve, Fort Benjamin Harrison, Indiana

THE GEORGE ROGERS CLARK MEMORIAL GROUNDS IN VINCENNES, IND., NOW APPROACHING COMPLETION, SHOWING THE MEMORIAL BUILDING, THE NEW INTERSTATE BRIDGE AND THE OLD CATHEDRAL

Construction of the riverside boulevard awaits the elimination of the railroad switch

including stores, industries and dwellings, fifty in all, have been acquired by the state of Indiana, and the costs of improvements, including the river wall, grading, landscaping and the Memorial structure, have been paid from appropriations by Congress amounting to 1¾ million dollars.

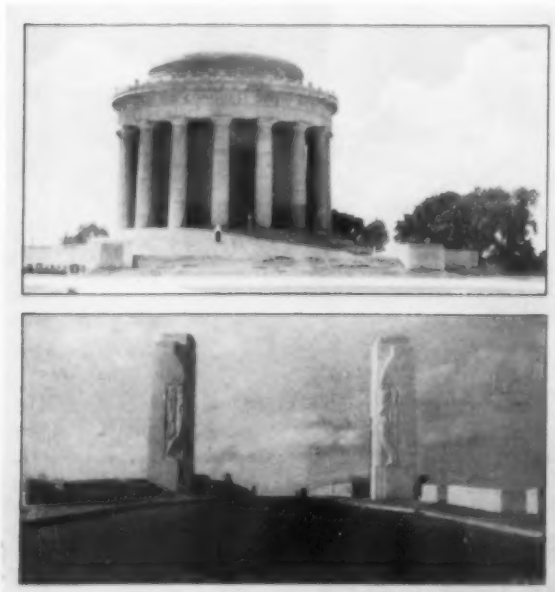
Following the removal of the old buildings, four of the streets within the site of the old fort were vacated and readjusted to the needs of traffic. The area taken for the Memorial grounds is about twenty acres, the equivalent of eight city blocks. As a part of this project a new bridge of seven spans of reinforced concrete has been erected at the joint expense of the states of Indiana and Illinois. From this bridge, which is a link in U. S. Route 50, the Memorial grounds can be viewed to good advantage. The riverside boulevard, to become a link of U. S. Route 41, will be built as soon as an industrial railroad switch is removed. The Cathedral Church of St. Francis Xavier, built in 1826, with the old French burying grounds, forms a part of this historic setting.

The Building and Its Setting

The Memorial building, a circular temple designed by F. C. Hirons, architect, of New York, is built of Stansted Vermont granite. It contains seven great murals by Ezra Winter depicting the achievements of Clark and his associates, and related subjects. The Memorial grounds, together with the river wall, the bridge approach faced with Mt. Airy granite, and the landscaping of the grounds, have been designed by Bennett, Parsons & Frost, architects, of Chicago. The watering of lawns during summer heat is provided for by an underground sprinkling system of 1,001 heads with water pumped from a well on the grounds. Lighting of the grounds and adjacent streets is afforded by 61 lights of the lantern type supported on bronze standards. The lights, of 2,500 lumens each, are controlled by astronomical dial, motor-operated automatic time switches. The exterior of the building is lighted from the soffit of the colonnade, and the bridge is floodlighted from lights placed near the bridge approach.

A seated figure of granite representing Francisco Vigo, pioneer trader, financial supporter and advisor of Clark, by John Angel, sculptor, will be placed near the river wall facing the Memorial building. Albin Polasek is the sculptor of a bronze statue of Gibault, French priest, who secured the allegiance to the American cause of the French population of Old Vincennes. This statue will be placed in front of the Cathedral. Figures of Indians of heroic size are carved in the face of the granite pylons at the bridge approach. A flagpole placed on the terrace represents, as a part of the Union, the five great states formed from the old Northwest Territory.

Thus the actual site of the old fort becomes a page of history on which the great events and persons taking part in them are vividly and permanently recorded.



THE GEORGE ROGERS CLARK MEMORIAL, AND THE LINCOLN MEMORIAL BRIDGE, VINCENNES, IND.

How to Encourage Tax Delinquency

THE injurious effect of ill-considered legislation for the remission of penalties on delinquent taxes was pointed out in a recent address of Mayor Turner of Dallas, Texas, which was delivered before the Citizens Charter Association of that city:

"At the recent special session of the State Legislature a bill was passed to become effective February 9, 1935, which remits interest and penalty on all taxes that were delinquent on August 1, 1934, when such delinquent tax is paid prior to March 15, 1935. As was anticipated, the passage of this state legislation caused local people to stop paying delinquent taxes, since by waiting until February 9 they could pay without interest and penalty. In order that the city might not sustain any loss on this account, and for the further purpose of giving this legislative theory a fair trial in Dallas, the City Council has passed a resolution which, in so far as city taxes are concerned, makes immediately effective the remission of interest and penalty on taxes that were delinquent prior to August 1, 1934."

Another disadvantage of such legislation, not pointed out by Mayor Turner, is the stimulus which it gives to *future* tax delinquency by property owners who will be encouraged to delay payment of current taxes in the hope of similar legislative leniency in years to come.

Municipal Revenues Augmented by Sewer Service Charges

IN his above-mentioned address, Mayor Turner of Dallas, in discussing municipal economies, said:

"If I have learned anything about government since I took office nearly four years ago, it is this: that when government is operated decently, honestly and efficiently, as we have tried to operate it, it does not represent waste and extravagance, but rather should be regarded as a community overhead necessary for the preservation of public safety, health, welfare, and to a certain extent, public convenience. We must have local governments, and local governments must spend some money. The Council gave expression to the recognition of this fact when in adopting the budget for the current year it continued in effect the reduced property valuation and at the same time levied a sanitary sewer service charge which would augment the city's tax revenues by approximately $260,000. In other words, the full 15 per cent saving was available to the people for one year, and approximately two-thirds of such saving is available for the current year. This sewerage charge has proved successful in other cities in Texas and elsewhere. The entire revenue from this sewer service charge is being used to meet interest and sinking-fund requirements on sanitary sewer and sewage disposal bonds."

Meters Tell the Story

Griffin, Ga., Filtration Plant and Pumping Station Well-Planned and Operated with Electric Water Meters to Check Costs

IF a plant manager of any commercial enterprise is to know the cost of every operation involving the use of power and fluids he installs electric and fluid meters. The Griffin filtration plant and pumping station is operated on this principle, with water as the manufactured product. The incoming electric line supplying all the power and lighting current is equipped with a totalizing meter and then part of the 550-volt current is reduced to 110 volts for house lights. There is a separate meter for the wash-water pump motor, and the same meter accounts for the power used for the motor for the elevator for the chemicals for the upper floor, and several miscellaneous motors such as the dry feed machines for chemicals. Each pump panel has a watt-hour meter, a recording ammeter, and a direct-current ammeter for the exciter field. The main panel also carries a recording volt meter, an alternating current ammeter and a power-factor indicator.

Thus the electrical side of the plant is checked very accurately, and waste of electric current is easily accounted for. On the water side there is a Simplex 16 x 9:5-inch venturi meter on the raw water from the river pumping station, a duplicate on the discharge line to the city mains, and a 16 x 12-inch Simplex venturi on the wash-water line. The discharge meter acts as a complete check on pump operation, for the pumps are always operated singly and the electric meters show the time the various pumps are run. In order to account for the water used within the plant, all water used there is taken from the discharge main through a 6-inch meter and 6-inch line for general purposes, and the sanitary water, including the laboratory water, is metered by a regular domestic meter. In addition, the city is 100 per cent metered, and that includes every city building, school, church and hospital. Thus when the Department is asked for figures such as appear with this article showing how much power is used to pump water, and the amount of water used for washing filters, it is all known, to the best and closest figures, with businesslike directness.

The River Pumping Plant

The plant now furnishing water to the city of Griffin was completed and placed in operation July 1, 1930. At that time the pumping station on the shore of the Flint River was placed in operation with three De Laval pumps powered with General Electric motors sending the water to the plant a distance of about 9 miles. The intake is a concrete box at about the center of the river behind a low dam. It has a 24-inch cast iron line from the intake to the suction well located on the shore about 50 feet from the pumping station. The water flows through a ½-inch mesh copper screen to keep out small fish and trash, and thence to the suctions of the pumps. There is one 2,800-gpm pump driven by a synchronous motor at 1,200-rpm, one 2,100-gpm unit driven by a 1,200-rpm motor, and the third a 1,860-gpm pump operated at the same speed, all delivering to a single header leading to the 20-inch main to town. The current for the pump motors is all 550-volt.

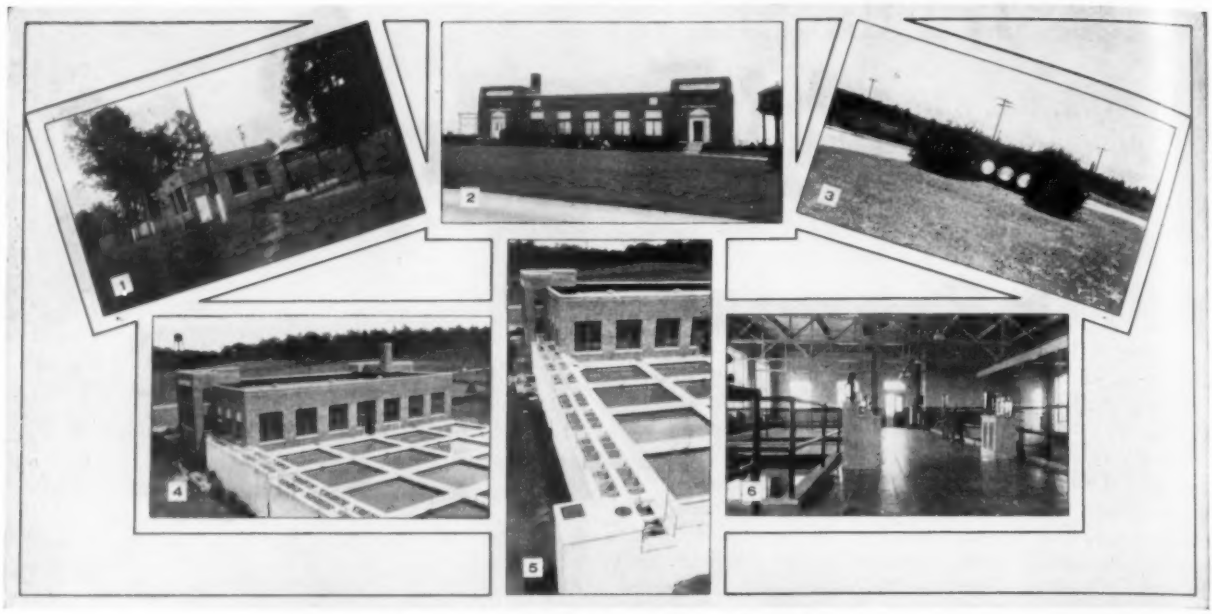
ENTRANCE TO THE FILTRATION PLANT, GRIFFIN, GA.

The river pumping station is so built that it is proof against the highest floods recorded in fact or in the memory of "the oldest inhabitant," and if the rise is greater than covered by the elevation of the plant floor, the main door can be readily barricaded with sand bags and any leakage removed by a small sump pump. Thus the source is well protected against the hazard of flood.

The Filtration Plant

The discharge end of the 9-mile line from the river pumping station is into the mixing chamber where the chemicals are applied. This mixing chamber is a concrete channel in duplicate with the ducts for the chemical solutions cast in the top of the wall separating the two mixing channels. The mixing chambers are 98 feet long, and 2 feet 6 inches wide, and vary in depth from 16 feet at the influent end to 13 feet at the discharge end to take care of the loss of head over and under the 124 baffles in each channel. The chemical ducts are two in number running along the top of the center wall, and measure 4 inches wide each and from 9 to 6 inches deep with a semi-circular invert.

Chemicals may be applied to the mixing chambers at the influent end and 24 and 48 feet along the channels through ports controlled by small sluice-gates. The chemicals used include Nuchar, activated carbon, at a rate of 1 ppm to the influent to the mixing chamber with an increase to 3 ppm in the fall of the year when there are tastes caused by algae. Alum is applied 24 feet from the influent, or half-way through the mixing channels, at an average rate of 1.08 grains per gallon, increased to 2.5 grains for high turbidities of 5,000 ppm. The low turbidity runs about 70 ppm. Lime is applied on the way to



SCENES AT THE GRIFFIN FILTRATION PLANT

1. The River Pumping Station. 2. General view of the filtration plant, with wash-water tank at right. 3. A battery of floodlights for illuminating the façade of the plant at night. 4. The mixing channel and settling basins. 5. Close-up of the mixing channel. 6. Filter floor with operating and sampling tables

the clear well after the water has been filtered, an average dose being 9.3 ppm to bring the pH to 7.8. The pH of the raw water runs from 5.5 to 6.9, and the coagulated water from 5.3 to 6.1. Chlorine at the rate of 0.45 ppm, giving a free chlorine of 0.25 to 0.30 after 20 minutes, is applied just ahead of the lime in the filter effluent line, using a Wallace & Tiernan MSA solution feed machine. There are no positive presumptive B. Coli tests on 10 cc of water delivered to the distribution system.

The thoroughly mixed water and chemicals flow through a 24-inch cast iron line to four 12-inch inlets to the stilling wells of the coagulating basins. The basins are in four sections or separate basins with separate stilling wells for each. There are 62 orifices in the upper two-thirds of each wall, spaced 24 inches each way and 4 inches in diameter with a 3/16-inch taper. There were 96 orifices in the wall, but the lower openings were plugged for better results. In basins 2 and 4 only the bottom rows were plugged, and in basins 1 and 3 about 30 were stopped up. The increase of velocity of the water in flowing through the reduced flow area has given better results, particularly at times of high turbidity.

The coagulating basins are 76 feet 2 inches long, 23 feet 2 inches wide each, and 12 feet 5 inches deep, with a retention period of about four hours. There are two drains in the bottom of each section of the coagulating basins, with 8-inch plug valves with the stems running up to the walkways for cleaning, which is done about three times a year. This cleaning is accompanied by a caustic soda treatment of the filter sand.

The filters receiving the settled water are four in number, each measuring 20 x 18 feet and having a capacity of 1 mgd. The underdrains are cast iron headers 14 inches in diameter with 2½-inch laterals, 9 feet 3 inches long. The influent line is 12-inch, the waste line 16-inch, and the wash-water line 14-inch. The perforations in the cast iron laterals are ¼-inch holes 12 inches apart. The gravel, graded from 2½-inch at the bottom to ⅜-inch at a height of 18 inches, supports the 30-inch sand bed. The top of the concrete wash-water troughs is 29½ inches above the sand. The expansion of the sand on washing is about 50 per cent with high-velocity water wash.

As an aid in reducing the amount of wash water used, the surface of the sand of the filter is thoroughly hosed with a garden hose and nozzle after the water is drained down to just below the surface of the sand. This breaks up the surface mat and greatly reduces the time of wash and hence the amount of water. Washing is continued for only 4 minutes at a rate of 6,500 gpm.

The filter effluent flows through a 16-inch line to an 18-inch header to the clear well. In this line there is a 2-inch tap for the application of lime and a 1-inch tap for chlorine. The rate of flow of the filters is controlled by a Simplex rate-of-flow controller, and there are Simplex loss-of-head gages. The filter gates are operated by Bacharach hydraulic control tables. The clear well has a capacity of 1.5 million gallons and is 135 feet in diameter and 14 feet deep.

All chemicals used in the plant are delivered by truck to a large receiving door in the basement and raised to the second floor by elevator to a somewhat inadequate storage room. The chemicals are weighed out on scales in the storage room and dumped through slots in the floor to the hoppers of the three Bacharach dry feed machines of the reciprocating type. The dry lime, alum and Nuchar are pushed off into the solution boxes, where they are carried off with flows of about 10 gallons per minute.

The wash-water tank of 75,000 gallons capacity is located near the end of the mixing chamber at an elevation 35 feet above the filters to the bottom of the tank. This tank was furnished by the Scofield Iron Works of Macon, Ga. Three small water lift pumps furnish power to operate the sample table on the operating floor, which includes raw water, chlorinated water, and finished water

from the suction line to the pumps. These pumps require 3 gallons of water per minute each.

The High-Pressure Pumping Plant

Located in the basement of the filtration plant, with plenty of light and air and open to the operating floor of the filter plant, is the high-pressure pumping plant. A 24-inch suction line connects the pumps with the clear well. The first pump in the line from the clear well is the De Laval 2500-gpm unit direct-connected with an 8-cylinder Sterling gas engine as a standby in case of power failure. The gas engine is turned over every month or two and run for about 15 minutes to insure its prompt action in case of emergency.

The regular service pumps for the high-pressure system are: a De Laval 2500-gpm with a 150-hp G-E motor; a De Laval 1800-gpm with a 100-hp G-E motor; and a De Laval 2800-gpm with a 200-hp motor. Each of the pumps is equipped with a Chapman check-valve and gate on the discharge side, and a foot-valve on the suction side. The switchboard for the control of the pumps and all other electrical equipment, as mentioned in the opening paragraphs, are located on suitable panels in the basement.

Two Elevated Storage Tanks of the City

The city is provided by two tanks with elevated storage against temporary power failure, and to supply the city until the emergency pump can be started. One 300,000-gallon tank is located on the edge of the city near the filter plant, with the overflow at elevation 120. The other tank, with its overflow at the same elevation, has a capacity of 275,000 gallons and is located near the center of the city. One of the tanks was furnished by the R. D. Cole Manufacturing Co., of Newnan, Ga., and the other by the Schofield Iron Works of Macon, Ga.

Laboratory and Other Plant Equipment

The filtration plant is equipped with a complete laboratory for chemical and bacteriological control and studies. A room for living quarters is located immediately above the laboratory. There is a toilet and washroom for the Negro help below the office and laboratory, and also separate toilet and washrom facilities for the white help, as well as a toilet in the laboratory.

A Harrington Peerless 5-ton crane runs on I beams suspended from the roof trusses over the pump room for handling the pump casings and impellers if necessary. The capacity of the filtration plant is such that it is operated from 7 A.M. to 5 P.M., and the river pumps during the same hours, while the high-pressure pumps are operated as needed to maintain the tanks filled in town.

The plant is operated by Louis R. Simonton, Superintendent of Filtration, under the direction of H. P. Powell, City Manager.

CITY OF GRIFFIN
Light, Water and Sewerage Department

OPERATING REPORT OF WATER AND SEWERAGE DEPTS. FOR YEAR ENDING Nov. 30, 1934

		% OF PUMPAGE FROM RIVER	KW. H. USED	KW. H. PER 1000 GALS.
Gallons Pumped to City	323,257,800	90.9	295120	.913
" Lost in Production	32,363,200	9.1	(SEE ABOVE)	
" Pumped From River	355,621,000	100.0	424480	1.194
		TOTAL KW. H.	719600	2.226

TOTAL KW. H. PER 1000 GALLONS PUMPED TO CITY

CONSUMPTION

		% OF TOTAL PUMPAGE TO CITY
Total Number of Gallons Sold to Consumers	270,480,100	83.7 PER CENT
Number of Gallons Consumed for Sewer Flushing	2,450,000	.7 " "
" " " " by Fire Department	282,000	.1 " "
" " " " by Free Services	2,433,900	.7 " "
Total Number of Gallons Accounted for	275,646,000	85.2 " "
Distribution Losses	47,611,800	14.8 " "
TOTAL WATER PUMPED TO CITY	323,257,800	100.0

WATER SALES

CLASS OF CUSTOMERS	NUMBER OF CUSTOMERS	NUMBER OF GALLONS USED	%	REVENUE	%	REVENUE PER 1000 GALLONS: WATER SOLD TO CUSTOMERS	REVENUE PER 1000 GALLONS: TOTAL WATER PUMPED TO CITY
Domestic	1466	84,081,900	31.1	23,556.33	47.3	.2782	.2243
Industrial	316	186,398,200	68.9	24,889.40	52.1	.1332	.1114
Sprinklers	12	---	---	278.58	.6	--	--
TOTAL	1794	270,480,100	100	47,664.91	100	.1762	.1474

OPERATING EXPENSES

PRODUCTION DEPT. COSTS		COST PER 1000 GALLONS: WATER SOLD TO CUSTOMERS	COST PER 1000 GALLONS: TOTAL WATER PUMPED TO CITY
Power	10,944.20	.0405	.0339
Chemicals	1,733.38	.0064	.0054
Repairs & Replacements	523.85	.0018	.0015
All Other Production Expenses	6,108.01	.0223	.0189
Total Production Expense	19,309.44	.0710	.0597
Add ⅛ of General Expense	1,119.92	.0045	.0035
Total Cost of Production	20,429.36	.0755	.0632

DISTRIBUTION DEPT. COSTS		COST PER 1000 GALLONS: WATER SOLD TO CUSTOMERS	COST PER 1000 GALLONS: TOTAL WATER PUMPED TO CITY
Total Distribution Dept. Expenses	6,561.33	.0243	.0203
Add ⅛ General Expenses	3,359.77	.0124	.0103
Total Cost of Distribution	9,921.10	.0367	.0306

TOTAL OPERATING COSTS		COSTS PER 1000 GALLONS: WATER SOLD TO CUSTOMERS	COSTS PER 1000 GALLONS: TOTAL WATER PUMPED TO CITY
Total Production Costs	20,429.36	.0755	.0632
Total Distribution Costs	9,921.10	.0367	.0306
Total Operating Costs	30,350.46	.1122	.0938

		SOLD TO CUSTOMERS	TOTAL PUMPED TO CITY
Average Selling Price	per 1000 Gallons	.1762	.1474
" Operating Cost	" " Gallons	.1122	.0938
" Net Operating Profit	" " Gallons	.0640	.0536

Net Revenue from Operations	47,664.91
Operating Expenses	30,350.46
Net Operating Profit for year	17,314.45

FIRE HYDRANTS IN SERVICE LAST DAY OF MONTH	WITH PUMPER CONNECTION: 6 IN.	8 IN.	10 IN.	WITHOUT PUMPER CONNECTION: 4 IN.	6 IN.	TOTAL
	95	13	0	41	79	228

WATER MAINS IN SERVICE—ALL CAST IRON—CLASS C OR BETTER

SIZE	4 IN.	6 IN.	8 IN.	10 IN.	12 IN.	16 IN.	18 IN.	20 IN.	TOTAL MILES
MILES	3.202	15.829	2.970	.634	2.428	.387	.449	7.796	33.695

Roadside Planting with Relief Labor

THE planting of trees along highways, city streets and in public parks is being advocated by The American Forestry Association as a major work relief project for the spring. The approval of the Federal Emergency Relief Administration was issued in January in a working procedure whereby state, county and municipal administrators of public funds may undertake highway and other plantings that will be of broad and lasting value. The procedure calls for the use of local labor under the supervision of landscape architects, the work to be carried out according to plans sponsored by local citizen groups and organizations. Projects may be large or small, depending entirely upon labor and planting demands and upon the desire of communities and states to improve roadway and city landscapes.

"For years hundreds of civic and other public-spirited organizations and citizens throughout the country have been seeking ways and means to have barren and treeless highways and city parks landscaped with trees," The American Forestry Association points out. "Here is the opportunity to take a long step in that direction."

Resurfacing City Pavement with Brick

By M. P. O'BRIEN
City Engineer,
Springfield, Ill.

THERE are no set rules to follow in resurfacing a city pavement except the absolute necessity of doing everything required to secure the highest possible stability and smoothness of both the foundation course and the surface course.

A very careful examination of the old pavement should be made to determine the reasons for its rough condition. The usual causes are edges of brick worn to a rounded shape by horseshoe calks and steel tires in bygone years; shifting of the sand cushion, causing settling or raising of brick due to moisture penetrating the wearing surface and creating a semi-fluid condition in the sand; service trenches of various kinds which have been improperly backfilled, resulting in consequent settlement; and, occasionally, a naturally weak area of subgrade caused by excessive moisture confined in such a way that it will not drain. It may be found also that when a concrete foundation is used, excessive cracking has occurred, causing a displacement of the surface through the running-out of the sand cushion.

Roughness caused by worn bricks or a settlement of the

PREPARATIONS FOR RESURFACING IN SPRINGFIELD, ILL.

1. An old street surface needing resurfacing. 2. Another preparatory job—the street-car track removed and replaced with a concrete slab. 3. Spreading the concrete mortar leveling course. 4. Using the template on the leveling course. 5. Laying and spreading the mastic cushion. 6. The brick unloaded on a pallet at side of street

LAYING AND FINISHING THE NEW BRICK PAVEMENT

1. Laying brick. 2. A wedge brick course used at the gutter flag. 3. Spraying the brick to prevent the filler from sticking to the top surface. Pouring joints in the background. 4. Applying water to the filler to facilitate removal. 5. Removing excess filler from the surface. 6. Testing the surface for irregularities with a straight-edge

wearing course is easily cured by a leveling course of mortar, concrete, or bituminous material. This material is best paid for by the cubic yard, or by the ton when bituminous materials are used, and measurements at the mixing plant are the best way to determine the amount used. Where improperly filled trenches have settled, carrying both base and wearing courses into depressions, the pavement should be opened so that a thorough examination of the trench may be made. It will often be found necessary to add a fill to the old trench, thoroughly tamped in thin layers, and when the trench has been brought to the level of the subgrade, to install a concrete slab, reinforced if necessary, of a thickness reaching from the subgrade to the surface of the old pavement. When subgrade weaknesses appear to have caused trouble, it may be that removal of a portion of the earth and its replacement with gravel or stone will give the desired result, or, in more serious cases, a short line of drain tile may be necessary. When base failure has occurred, the destroyed material should be removed and replaced.

All faults existing in the old pavement detrimental to stability must be corrected, and in most cases they are surprisingly few, and the cost for their correction is very small. It has been my experience that in at least 95 per cent of the total areas resurfaced during the last twenty years, the foundation course, either brick base course or the so-called low strength concrete, is in practically the same condition as it was when laid. Outside the cases of settlement over trenches, the greatest contributing factor to roughness has been the shifting of the sand cushion due to the entrance of moisture. This is easily understood when it is recalled that a sand filler was used in the early brick pavements, followed later by the use of a cement grout and its consequent cracking, causing breaks in the bond between the bricks.

Correcting the Grade

When the survey has been completed, the engineer determines the cross-section he desires to install, and the grades at the curb lines are corrected for any deficiencies existing

in the surface drainage facilities. New inlet castings may be needed, and curbs will no doubt need certain repairs or replacements. Renewal of sewer and utility manholes, and their adjustment to the new grade, will have to be taken of.

The grade, both longitudinal and transverse, having been determined, the quantity of the leveling material, or build-up, is next determined. Where a small area of old brick is too high to fit the new surface, the wearing surface and cushion in that area are removed, and the surface is brought to grade by the use of concrete, usually, to the elevation of the old surface course. The levtling course is then applied to the old surface, and, by templates and very careful use of the straight-edge, is brought to the desired grade. Standard methods of finishing and curing are used, and every effort should be exerted to have the surface of the leveling course as smooth and as true in cross-section and grade as the most modern methods will permit.

Special Templates

A rather ingenious and simple system of guides for the templates was worked out during the past construction season in Springfield. Instead of using steel or wooden forms on which to slide the templates, strips of concrete or mortar were laid to exact grade at the curb lines and center. The true grades at the curb lines were marked on the face of the curb at 25-foot intervals and connected by chalk lines. On centers, and quarters when necessary, grade points at the new intervals were established by the engineers. These points were then connected, longitudinally, by strips of mortar or concrete, at least one day in advance of spreading mortar. They provided a true, uniform support for the templates. At intersections the same methods were used, including such diagonal grades as are necessary to secure the desired surface. I cannot too strongly emphasize the necessity of a true surface of the base course under brick, or any other wearing material. This is not peculiar to resurfacing projects, but applies equally to an entirely new job.

The cushion, or bedding course, must be of uniform thickness, preferably not more than ¾-inch. This uniformity is probably even more important where the rather recently developed mastic is used, so that any settlement, however slight, under traffic will be be such as to keep the wearing surface in a true plane. The mastic bedding course is preferable to dry sand because of the insurance it affords against shifting, should moisture enter the structure. Thorough rolling and luting is again required, and the surface should be tested with a 10-foot straight-edge.

Setting the Brick

Uniformity in size and toughness of present-day paving brick, and the rather general use of side and end lugs, have made possible the neat, well-filled surfaces and straight joints which add so much to the appearance of a brick street. There can be no doubt that the close uniformity of wear now obtainable because of these lugs will add years to the life of such pavements.

By paying close attention to the manner in which brick are set, and by the proper use of the roller, there is little difficulty in securing a surface that will not vary more than ⅛-inch in 10 feet, and this should be the maximum tolerance in all cases. Should high spots or depressions appear after rolling, the brick in these areas must be removed, the cushion carefully adjusted, and the brick replaced so that after the rolling the surface will be at grade.

Since the introduction of the side and end lugs, the problem of thorough filling of joints has become much easier of solution. The increased joint space has permitted the use of a spray or paint coat on the surface, affording an easy way to remove excess filling material. During the past year, a mixture consisting of 1½ pounds of starch, 34½ pounds of calcium chloride, and 64 pounds of water, applied as a spray, has given satisfactory results. During extremely hot days, when the filling material remained "gummy"" for a considerable time, it was found that water applied to the surface of the asphalt by means of a garden hose permitted its removel immediately adjacent to the area in which filling was proceeding. There can be little objection to the slightly increased cost of removal of excess filler, which has run from 3 to 5 cents per square yard. The improvement in appearance alone would justify this small cost, but to me the fact that there is no filler left to be picked up and then dropped again by vehicles, to produce a rough pavement, a condition which often continues for several years, is a more important reason for its complete removal.

ACKNOWLEDGMENT.—From a paper presented at the 1935 annual convention of the National Paving Brick Association.

TO PLAN, OR NOT TO PLAN

By PAULINE KAVANAGH DRUMM
Lansing, Michigan

To plan, or not to plan: that is the question:
Whether 'tis saner in the end to figure
The ways and means whereby a country profits
In work and health and higher mode of living,
Or think it done by wishing? To grow, to fret
No more: and by haphazard growth to end
Starvation, unemployment, filthy slums
And all life's problems. 'Tis a consummation
Devoutly to be wished. To grow, to dream;
To dream, perchance to drift; ay, that's the rub.
For in that drifting growth what havoc reigns,
With no provision made for those to come
Or even those of our own age,
When there's no work, no food, no place to live.
What would the dreamer say to facts like these?
The breadline, dole, the poorhouse, or the street,
Because the dream had not foretold such woes?
When careful plans, long laid, might stop such waste
Of human lives and hearts and even souls!
To know, by computation, what should come
By natural growth in each diverging sphere,
And so prepare to meet what ills must come;
And what need not, prevent by future means
To regulate conditions that arise,
Forearmed by knowledge gained throughout the past,
No doubt would be a safer course to steer
Than heedless cruising, rudderless and blind.

—Contributed to THE AMERICAN CITY and the National Conference on City Planning.

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Complete Modernization of Profitable Electric Plant at Richmond, Indiana

"We now have a property with a book value of approximately $4,000,000, *all of which is paid for, and there is no indebtedness. We have in the banks and invested in government bonds a reserve fund of* $450,000. *We earned in* 1934 *approximately* $300,000. *We shall now be able either to reduce our rates or transfer more funds to the civil city. We now have the lowest electric rates in the state of Indiana."*

DAN C. HESS, *Manager.*

RICHMOND, IND., is a city of 32,000 that owns what is said to be the largest and most modern municipal electric plant in the state and has the lowest rates (reduced five times in ten years).

The conception of responsibility is threefold: (1) management that lowers costs and rates and thus encourages use of electricity, with 600 kwh the present yearly average and 13,200 kwh the goal; (2) continuous service, practically assured by the recent expansion and modernization program; (3) complete service to all classes of customers and prospective customers.

A private plant was built here in 1884 by Benjamin and James M. Starr, and the first resolutions leading to municipal ownership were introduced in the Common Council in 1898, decision to erect an electric plant was reached in 1900, and the contract was awarded for $144,490 on January 14, 1901.

During the last twelve years, and under the continuous management of Dan C. Hess, the plant has contributed more than $400,000 against the operating costs of the city, and last year the City Council set the contribution at $105,000, an amount equal to 35 cents per $100 of assessed value, or $17.50 on $5,000.

In fact, the plant can be something of a banker for the city. For example, at the opening of the CWA program, the city desired to cooperate with the Federal Government, but funds were not available for the purchase of materials, and time did not permit of a bond issue; but in half an hour the Council negotiated a loan of $45,000 from the plant's depreciation and reserve. At the same time the plant, desiring to proceed with the construction of its underground system, was authorized to transfer $50,000 from the same fund to the general fund, the money to be used for the purchase of materials, and the plant agreeing to repay the loan from earnings. Through these transfers more than 1,000 men were put to work on plant and city CWA projects.

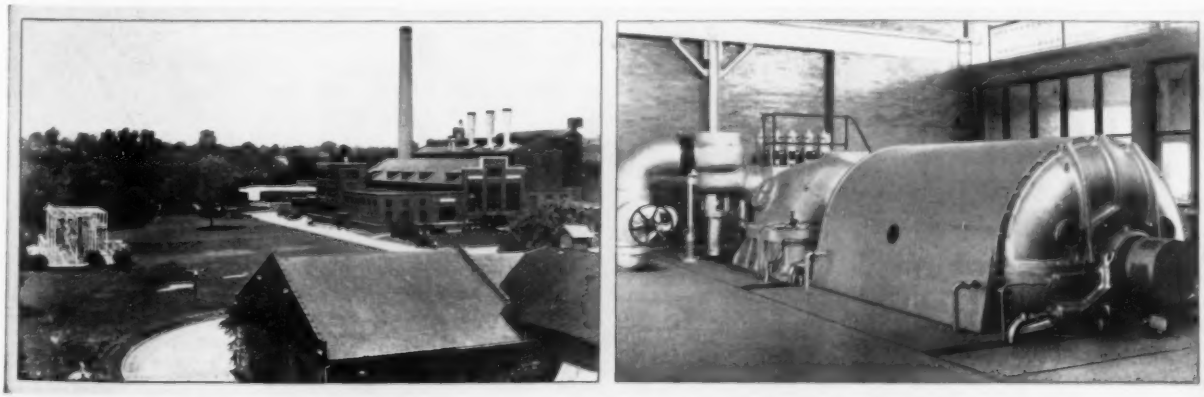
In 1931 a million-dollar improvement was started: (1) to provide standby capacity equal to the 15,000-kw capacity of the plant; (2) to take care of future load needs that were plainly developing; (3) to cut costs by the use of the latest machinery. A new 15,000-kw turbine-generator now carries the entire load of the city, with the same capacity in two units in reserve. The plant is now valued at $4,000,000.

This improvement program, writes Mr. Hess, the Manager, includes complete modernization of all station equipment, remodeling of certain portions of the power-plant building, changes in the arrangement of the coal-unloading and handling system, and doubling plant capacity. Because of operating economies inherent in higher pressures and temperatures, it was decided to combine a modernization program with that of expansion of generating capacity.

Efficient Steam Equipment

Steam generating equipment for the higher pressure and temperature consists of three 1,000-hp, 4-drum, bent-water-tube Foster Wheeler boilers equipped with water-cooled furnace walls. All boilers are fired with Taylor stokers fitted with Hele-Shaw variable-speed transmission for the regulation of fuel feed.

The primary function of the Bailey Control Meter System installed in this plant is to supply fuel and air to the boilers in proportion to the demand for steam. In addition to maintaining pressure, the job of this control is also to maintain the best combustion efficiency. This it does by burning all the fuel with the least excess air, thereby



THE REMODELED POWER PLANT AT RICHMOND, IND., AND THE NEW 15,000-KW TURBINE-GENERATOR

Richmond has placed her faith in Municipal Ownership

....and backed this faith with ACTION!

She now has the LARGEST and most MODERN city owned Generating Station in the State

Visitors Are Always Welcome

It is YOUR generating station . . built to take care of YOUR ever-growing needs for electric service.

It is YOUR duty as a citizen, consumer of electricity, and taxpayer to visit this new station —to familiarize yourself with its operation . . . so that you will be prepared to assist your city officials in its operation.

The operation of this station is a COMMUNITY RESPONSIBILITY.

You have invested a large sum of the communities money. It is now up to you to see that this money is safeguarded.

You cannot intelligently help YOUR city officials and employees unless you are familiar with their problems.

Visit the Station Thursday, Friday, Saturday or Sunday

Richmond does not only have one of the LARGEST and most MODERN generating stations in the State, but we have the LOWEST RATES for electric service in the State.

Take advantage of this ABUNDANT supply of electricity and the LOW RATES — let YOUR utility serve you in your STORE, FACTORY, OFFICE, and HOME.

THE MORE YOU USE THE CHEAPER THE RATES CAN BE MADE.

The keen minds in industry have recognized the advantage electrical applications offer . . . . By so doing industry has advanced more in the last 50 YEARS than it did in the PRECEDING AGES.

Electricity stands ready now to do the same for your HOMES. . .

The building of the railroads and the advent of the automobile age lifted this country out of depressions and made it PROSPER.

THE ELECTRIFICATION OF HOMES WILL AGAIN BRING BACK PROSPERITY.

The electric RATES in Richmond have been reduced FIVE times in the past 10 years—each reduction in rates was so made to encourage GREATER use of ELECTRICITY in the HOME.

The average home today uses approximately 50 KW. H. of electricity per month. — THE ALL-ELECTRIC home would use approximately 1,100 KW. H. per month.

As you install Electrical Appliances and your home approaches the ALL-ELECTRIC HOME, your electric RATES will be reduced—Because YOU own YOUR electric utility and it is run on a profit-sharing basis.

Then why use other methods when ELECTRICITY will do the job BETTER and at the same time REDUCE the COSTS for home operation.

Visit your Light Plant. Become electrical minded --make your home a better place in which to live

THE PLANT ADVERTISED IN THE RICHMOND, IND., "PALLADIUM" AND "SUN TELEGRAM" OF SEPTEMBER 24, 1934

creating a high heat potential in the furnace. If this were not done, fuel would be wasted, since an excess of air causes unnecessary loss of heat to the stack, while a deficiency of air results in a loss of unburned gas and carbon. The purpose of the Bailey meter control is to provide that amount of air which will burn the fuel most economically.

Automatic combustion control equipment makes it possible for the plant to capitalize on its investment in high-pressure high-temperature equipment, by operating the equipment at the conditions for which it was designed. Here at Richmond, the boilers, designed for 430 pounds and 720 degrees F., are operated at that rating, so that the 15,000-kw turbine will receive steam at 415 pounds and at a total temperature of 715 degrees.

These improvements were made without a shut-down, all change-overs taking place at periods of low loads during the early hours of morning.

The interior lighting of the plant was carefully designed, and by using true-tint daylight units the illumination over the main station switchboard corresponds as closely as possible with daylight values.

The distribution system is being placed underground as rapidly as possible. The original $18,000 appropriation was increased to $50,000 to take advantage of the CWA opportunity. Total cost is placed at less than $100,000, exclusive of the cable and the Federal Government's share in the work. The cable will cost $100,000.

The service records of the hundred employees range to 30 years: 44 of them average 14 years, 27 have a record averaging 8 years, and 23 of the plant's employees average 3 years of service.

An invitation was extended by the officials of the plant and of the town to every taxpayer, current user and person living in the surrounding communities to visit the plant on anyone or all of four stated days.

A Boiler or a Diesel?

IN 1933 it was found that the electrical load of the Litchfield, Minn., steam generating plant was increasing but that the steam load was practically stationary. The 300-hp boiler could no longer handle both the steam and the electrical loads and it was necessary to use the 400-hp boiler continuously during the winter months. After investigating the alternative of installing an additional boiler or a diesel engine, the Council decided on the diesel generating unit at an initial investment of approximately $60,000. With the large boiler off the line, the small boiler could handle the steam load and the diesel the electric load. Thus the diesel would act as standby during the winter months for both the steam generating and electric generating equipment. The diesel generating unit, 606-kw 875-hp, was installed during the summer of the year 1934.

The residential electric rate is 7 cents for the first 30 kwh, excess 2 cents, monthly charge $1. To the villages of Darwin, Forest City, Grove City, and several other communities, the rate is 10 cents for 20 kwh, excess 3 cents, monthly $2. To the farms on the 70 miles of lines, 10 cents for 40 kwh, 3 cents excess, monthly $4. Cottages at Lake Washington, 15 cents for 25 kwh, 3 cents excess, monthly $2. The steam-heating rate is 65 cents for the first 25,000 pounds, excess 50 cents, monthly charge $4 from November 1 to May 1.

Progressive Construction on Secondary Streets

Knoxville, Tenn., Used CWA Labor and Has Continued with Stone from City Quarry

IT IS interesting to see how one city has followed through with a progressive program of street construction when given the impetus by CWA funds. Knoxville had a relatively large mileage of secondary streets that were dusty in fine weather and muddy on wet days. It determined to clear up this condition so that as far as possible every piece of property would be on an all-weather street.

The City Quarry

For a number of years the city has owned an excellent quarry, which it has used from time to time for aggregate for city work. This quarry had been operated a few months each year up to and including 1933. Owing to the financial condition of the city at that time it was not possible to include in the 1934 budget a sufficient amount to operate the quarry satifactorily. However, when CWA funds first became available the operation of the city quarry was one of the first projects started under CWA. Considerable aggregate was produced during the months of December, January, February and March under CWA operation. With the initiation of FERA projects, the operation of the quarry was resumed and it has continued, producing an average of 150 cubic yards a day. This material has been made available at a very opportune time for use in secondary street programs.

The quarry was well equipped with drilling and crushing machinery, including an Allis-Chalmers rotary cone type crusher with a capacity of 250 yards per day, driven by an Allis-Chalmers 50-hp motor. The quarry is on a steep slope, making the clearing of the over-burden a rather difficult matter, but with sufficient labor it was continued well ahead of actual quarrying operations.

CWA paid for all the labor required and one new jackhammer required for drilling. When CWA was discontinued, the city of Knoxville did not just sit tight and stop work, but continued with TERA labor and furnished a blacksmith from its own funds for sharpening the drills, and also supplied the materials. About 80 men are employed in the quarry and are required for efficient operation. It has been difficult at times to maintain this number from the fluctuating supply, but the operation has been continued at as fast a pace as possible to further the secondary street program.

The stone from the crusher is screened to four sizes—1½, 1, ½, and fines, using four bins beneath the screens for storage.

Street Construction with Heavy Road Oil

The regular oiling of secondary streets has been carried on each year as a part of the maintenance program of the Service Department. In addition to the oiling a large number of secondary streets have been maintained by simply building up the grade with 2-inch stone to depth of from 4 to 6 inches, stabilized with screenings, and without any rolling or binding. This enabled the property owners to get in and out of their garages and onto the paved streets. While this method was not entirely satisfactory in producing a smooth roadway, it did build up a strong traffic-

FROM LEDGE TO COMPLETED PROJECT, KNOXVILLE, TENN.

1. The city quarry which has produced stone for CWA and TERA paving projects. 2. Douglas Street, Knoxville, a few days after the street was oiled

bound macadam base over what had been alternately dusty and muddy subgrades. Whenever the base failed, more of the 2-inch stone was placed in the hole, and this was continued until the weak spot was sufficiently strengthened to hold up the light traffic. It was not a truly scientific manner of correcting the secondary-street problem, but it effected a great improvement over the previously existing conditions.

As soon as the CWA program got under way, it was decided to push the improvement of these secondary streets with a binder that would make them smoother and easier to maintain, and hence much more satisfactory to the street department and to the taxpayer and user. The first step was to even up the existing macadam bases that had been laid by the methods discussed above, by placing a mulch of 1¼-inch stone where required and letting traffic compact it. In this case, however, the street was continuously maintained with the city's Rome power grader until it was properly crowned and compacted.

As soon as the street took on the semblance of a well-compacted macadam, the stone surface was brought up to a 2-inch thickness with more 1¼-inch material and rolled thoroughly. Immediately after this from ¾ to 1 gallon per square yard of Texaco road oil was applied and choked with 40 pounds per square yard of ½-inch screen material by hand casting and rolled with a 3-wheel Austin 9-ton gas roller. The asphaltic road oil used analyzes 99.64 per cent bitumen soluble in CS_2 and mineral ash of 0.30 per cent.

This secondary street improvement program has been carried on as a part of the regular routine of the Department of Public Service, under the direction of Harry J. Wight, Director of the Department: Hal H. Hale, City Engineer, and A. H. Brady, Superintendent of Streets.

Municipal Utilities Pay City's Way for Third Year

Huntingburg, Ind., in Ideal Financial Position

IT is somewhat difficult to conceive of a city of 3,400 population as being entirely free from city taxation. Huntingburg, Ind., is in her third successive no-tax year, and has hard-surfaced streets which are cleaned daily, a sanitary sewerage system to which every dwelling and business house is connected, daily collection of garbage, a salaried fire department, and a high school with an uncurtailed program.

Tax-Free for 1935

In view of the economic depression, with the accompanying demand for rigid economy in city expenditures, coming at a time when so many municipalities are faced with a serious shortage of funds, and maximum bonded indebtedness, the city of Huntingburg in southern Indiana offers a striking contrast to the general state of affairs. For not only is the city free from taxation—with a tidy sum on deposit—but, furthermore, the City Council, in September, 1934, announced that there would be no city tax levy for the year 1935. Thus for the third consecutive year Huntingburg was declared tax-free.

Huntingburg makes no bones about her secret, for she has published an attractive booklet, "Our Community's Achievement," which tells the story of thrift, non-partisan elections, and the public ownership of the light and water plants. These plants are operated efficiently and honestly, providing maximum service at moderate costs, producing a profit sufficient to defray the costs of city government. Each year since 1931, a sum to meet the expenses of city administration has been transferred from the earnings of the utilities to the general fund, and no city tax has been levied.

The Water Utility

Huntingburg acquired its municipal plants through purchase from local private companies. The water plant was purchased in 1892 for $26,000. The city began immediately to improve the service and equipment so that by 1933 the valuation placed by the State Tax Board on the water-supply system was $191,505. The supply is derived from three artificial lakes situated about one mile from the city. These lakes have a surface area of approximately one square mile and an average depth of fifteen feet. The watershed, which covers approximately three square miles, is owned or controlled by the city, and is kept free from contamination. The water is soft, tasteless and pure, and the supply is practically inexhaustible.

During the recent drought the city sold trainloads of water to communities along the Southern Railway, and supplied farmers with water for live stock. The city's storage reservoirs, situated on a hill overlooking the city, provide a maximum gravity pressure of 80 pounds and an average pressure of 65 pounds. The earnings of the water plant in 1933 amounted to $17,296.80, of which amount $6,970.40 represented net profit.

The water rates are as follows:

First	6,000	gals.	30c	per	1,000	per month
Next	6,000	"	23c	"	"	"
"	40,000	"	15c	"	"	"
"	150,000	"	12c	"	"	"
"	200,000	"	10c	"	"	"
"	500,0000	"	8c	"	"	"
"	1,000,000	"	7c	"	"	"
All over			6c	"	"	"

The minimum monthly charge is as follows:

½", ⅝", ¾" meter per month.....$ .50

1" meter per month	$1.00
1½" " " "	1.75
2" " " "	2.50
3" " " "	5.00
4" " " "	10.00
6" " " "	20.00

The Electrical Utility

Huntingburg acquired its electric power system in 1915. The purchase price was $21,000. A new plant equipped with condensers, ash conveyors, turbo-generators, and all modern labor-saving devices, was constructed immediately. By 1933, these and other improvements advanced the assessed valuation of the power system to $261,761. An electrically driven pump installed at the water pumping station resulted in a great saving in labor and fuel. Besides serving Huntingburg with power, the city's plant serves the town of Ferdinand, 7 miles distant, and an ever increasing number of lines are being extended into the rural district. The power-plant earnings in 1933 amounted to $60,372.90, with a net profit of $27,422.02.

The light and power rates, which were again reduced in 1934, compare favorably with rates through the state:

LIGHT RATES

First 50 kw	$ .07
Next 150 kw	.06
" 300 "	.05
" 500 "	.04
All over 1,000 kw	.75
Minimum charge per month	.75

POWER RATES

First 500 kw	$ .03
Next " "	.0275
" " "	.0250
" " "	.0225
All over 2,000 kw	.02
Minimum charge per month	2.25

It has been pointed out at various times in the past that the light and power rates in Huntingburg were slightly higher than in certain cities where plants were privately owned. In some cases that was true. According to the booklet, "Our Community's Achievements":

"It is likewise true that every one of those cities, while paying $0.005 to $0.01 less per kwh for electricity, was paying city taxes at rates as high as $2.23 per $100 of assessed valuation. There has been no city tax levy in Huntingburg since 1931. More than 98 per cent of the householders in Huntingburg patronize the power and water plants and thus contribute directly to defraying the cost of city government. Certainly this is a more equitable system of taxation than the general property tax."

Profits Used in Many Ways

Since the city purchased the utilities they have increased in assessed valuation from $36,000 to $453,267. That increase represents an investment by the citizens of the town in a going concern from which they benefit both as consumers and producers. The profits from the utilities run high. That is due in part to the fact that the plants are highly efficient, having been operated by the present superintendent continuously for seventeen years; that the rates are low enough to permit minimum as well as maximum consumption; and that the marginal power produced is sold through extension of lines to Ferdinand and into the rural district. The city of Huntingburg has never charged itself with hydrant and street-lighting service. If it did, the earnings would present a much more impressive figure, for those are items that run high in municipal operating expense. Then, too, the city's profit was reduced by 3 per cent, on account of assumption of the Federal tax on electricity by the city.

During the depression the city improved its plants to the extent of approximately $100,000. When possible, local labor and materials were used. Labor was staggered so as to give work to as many as possible. By making improvements at that time, the unemployment situation was relieved and the city was able to take advantage of reduced prices on materials and effect a saving of approximately 33.3 per cent.

Noiseless Cities Are Predicted

PREDICTING that the American city of the future will be noiseproofed and noiseless, Dr. Orestes H. Caldwell, editor of *Electronics* and of *Radio Retailing*, and a director of the new American League for Noise Abatement, told the members of the Poor Richard Club in Philadelphia recently that the present movement for noise abatement in offices, public places, factories and homes is creating new models and new products which are replacing outmoded equipment and so creating new payrolls and helping us out of the depression. "Present street noises and transportation racket will be unknown to the Philadelphians and New Yorkers of a hundred years from now," Dr. Caldwell said, "and will be regarded as amazing curiosities of a barbarous past. This was the reason," he explained, "for the sealing of noise records into a New York City cornerstone last week.

"So that our posterity of the happy noiseless future will be able to get some idea of the continuous torture undergone by their city-dwelling forefathers, accurate recordings were made of traffic sounds, elevated-train rattles, newsboys' shouts, automobile honks, and shoe-leather squeaks. These sound records were then transferred to an imperishable medium, and, along with instructions etched on glass by hydrofluoric acid, were sealed into a bronze casket and placed in the cornerstone. In order that the unknown openers of this cornerstone, a century or two from now, might be equipped to play the crude contraption of 1935, a latest-model pick-up and platinum needles were included in the bronze casket.

"Already street cars, busses and railroad trains are being silenced," Dr. Caldwell continued. "Rubber tires are saving nerves, and the next step may be rubbed-paved streets. With the new synthetic rubbers, here is a new volume market for American agriculture, to produce the raw materials in sufficient quantities. Acoustic materials are reducing noise and reverberation in building interiors, so that now offices, restaurants and public places can be silenced at will. Makers of office machines, typewriters, etc., are directing every effort toward silent operation, realizing that the public discriminates in favor of noiselessness, and that equipment which is comparatively new in other respects can be effectively made obsolete when a silent substitute comes along.

"Silencing of appliances for the home offers another large field for improvement. The wailing shriek of the electric vacuum cleaner can and should be silenced, in the interest of household tranquility. The rattlety-bang of the home clothes-washer needs noise-abatement. The roar of the home dishwasher needs noise-abatement engineering. The roar of the home dishwasher after dinner has unsettled many a digestion. And the noise of oil burners, electric clocks, water-pumps, etc., offers about the only remaining blot on the bright service escutcheon of these useful devices."

A "Reasonable Rate of Return" to Water Companies

Abstract from the Finding and Order in the Matter of the Petition of the Ansonia, Conn., Water Company for a Revision of Rates

THERE is no fixed standard or judicial determination of what is a fair rate of return for the utility industry. Such rate of return must depend upon local and general economic conditions existing at the time, and any special conditions pertaining to the company the rates of which are being investigated. Professor Clyde Olin Fisher of the Economics Department of Wesleyan University, testifying in behalf of the city of Ansonia, Conn., claimed that in times of depression the "value of the service rendered" should be limited by rates which will not cause the consumer to pay a larger percentage of his dollar for water than formerly. Despite the claims made and cases cited from the United States Supreme Court, the state courts and commission orders, the formula or legal standards for determining a fair rate of return remain unchanged, whether it be in times of prosperity or depression. In times of depression, however, the total revenue should be less, as the value of the property or rate base is naturally less, and the percentage rate of return on that rate base will also be less because money, or the dollar, does not command as high a rate of return in times of depression as it does in prosperous times. These are the principal elements causing the present "changed economic level," and these are the elements which cause utility companies to bear their legitimate share of the economic depression.

The determination of a proper rate base and a fair rate of return on such a rate base are the principal issues in a rate case. Professor Fisher presented an analysis of earnings of unregulated business industries, including Federal Reserve and other banks from 1928 to 1932 inclusive, showing the downward trend, and claimed that such downward trend should be reflected in the rate of return allowed for utility companies. The fact that certain industries, including certain banking industries, sank to a very low level of return or no return on investments does not afford a valid reason why a regulated industry supplying a daily human necessity should be arbitrarily reduced to that destructive level and prevent the rendition of adequate service. The low return of these certain industries affords no controlling criterion for determining what return a utility company would have to pay for new capital to carry on its business.

It may be claimed that on account of the stability and constant necessity of the commodity supplied by a water company, new capital can be procured at a lower rate of interest and the rate of return on the investment should be lower. Such a claim has some merit, but a governmentally imposed rate should be high enough to overcome the legal objection of confiscation, and any rate that would produce a return materially less than the rate of return which money commands in the locality would undoubtedly be held a confiscatory rate by the courts. Claim is made that the rate should not be more than the reasonable value of the service. That raises the question—what is the reasonable value of a water service without which a community could not exist? Clearly the value of such a service is the cost to the company, honestly and economically managed, of maintaining properly its plant and equipment, its operating expenses and overhead charges, and a fair return on the fair value of the property necessarily used in the rendition of such public service.

The cost of water to the average domestic consumer is about 5 or 6 cents a day, for the entire household, or about equal to the price of one small luxury per day. It is not conceivable that a necessary increase per customer of one or even two cents a day, in order that the company may properly maintain its service, would create an unbearable burden upon the community.

Taking into consideration present economic conditions and all the facts in this case, the Commission is of opinion that a fair rate of return at this time for the Ansonia Water Company, upon the found fair value of its property or rate base, is a maximum of about 6½ per cent and a minimum of about 6 per cent.

In prescribing a rate schedule it is impossible to forecast the exact amount of revenues the rate schedule will produce. It may, in fact, run under or over the estimate, and for that reason a margin in the rate of return must be considered. In this case if the earned rate of return does not prove to be materially in excess of 6½ per cent or materially less than 6 per cent, no injustice will be done.

An Outstanding Subsistence Homesteads Project

ONE of the most significant projects yet to be undertaken by the Division of Subsistence Homesteads entered its final stage of development recently, when Secretary of the Interior Ickes approved the budget and progress schedule for Jersey Homesteads, near Hightstown, N. J.

Planned to accommodate 200 needle trade workers and their families, the Jersey Homesteads project is outstanding by reason of the fact that it will be the first subsistence homestead community in which the major activities of the homesteaders will be conducted on a cooperative basis.

Jersey Homesteads will be developed with an allotment of $850,000 advanced by the Division of Subsistence Homesteads plus a down-payment of $100,000, or $500 per family, contributed by the homesteaders. Each family will purchase and own individually its home and one-acre homestead tract. The remainder of the land will be devoted to the various cooperative enterprises. Most important of the non-agricultural enterprises will be a garment factory, which will provide employment for the community's workers and give them the cash income required to meet the payments on their homesteads.

The project near Hightstown was accepted for development by the Division with the following objectives in mind:

1. To demonstrate the feasibility of decentralizing an industry which for years has been heavily concentrated in the congested areas of large cities, amid slum living conditions and sweatshop working conditions.

2. To demonstrate the merits of combining subsistence homesteading with work in a predominantly seasonal industry.

3. To conduct an experiment in cooperative working and living by a people noted for their adaptability to community living.

Theft of Current and What Some Municipal Plants Are Doing to Stop It

"THEFT of current isn't a problem with us," said the plant superintendent of a certain municipality.

"He thinks it isn't," said the meter superintendent of a large holding company that is changing over whole districts to outdoor metering.

There seems to be no doubt that diversion of energy is on the increase and that in many communities it cuts into revenue.

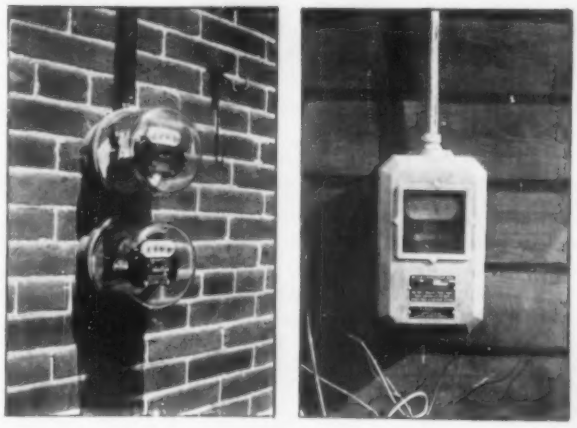
The generally recognized method of preventing tampering is to place the watt-hour meter ahead of the customer's service switch and fuses, outside the building where possible, and to enclose the meter and wiring. By this method of correction, known as the new sequence, the power plant's meter is segregated and locked from the customer's service equipment. As the meter is ahead of the house wiring and can have no effect on the service, there is no excuse for the customer to touch it. Furthermore, it is enclosed. The conventional bottom-connected meter may be enclosed in a metal box. The alternative to enclosing the meter is to purchase one of the new S-type meters, which are of the socket type with jaw terminal connections. This meter does not have to be enclosed in an auxiliary box. The bottom-connected type of meter can be rebuilt with jaw terminals for the S-type.

In some instances entire territories have been changed to the new system, with practical elimination of current stealing. Should the customer want to know the reason for the change, he is informed that new sequence eliminates the necessity of someone's being on the premises to admit the meter reader; eliminates the inconvenience caused by the meter reader and tester coming into his house; and eliminates the necessity of rendering an estimated bill through inability to read the meter.

Harry Petry, Superintendent of the municipal plant serving 1,905 meters at Rushville, Ind., says: "I believe that in future all residential meters and many small commercial installations will be outdoor type, not only for prevention of theft but for convenience and good customer relations as well." He reports that while theft of current is not yet a problem, it is increasing slightly and all new installations are new sequence (meter connected ahead of service switch and fuses).

O. Z. Tyler, Superintendent of the Jacksonville, Fla., plant, says theft of current is a problem, and that of the 33,300 meters, new sequence is used for 1,000 indoor meters and for 2,500 outdoor meters. Annual rate of change to new sequence is 300 indoor and 1,000 outdoor. In changing over existing installations to new sequence, 80 per cent of the meters are enclosed. Theft has thus been decreased.

Three Ohio plants report that theft is a problem and is on the increase. C. S. Miller, of Hamilton, with 11,000 meters, estimates that 10 per cent of the residential customers are diverting current. When discovered, service is cut off until estimated bills are paid. Socket-type meters are installed for all new customers. Bert Holloway, Plant Superintendent, of Niles, with 4,000 meters, says that in changing over all installations all meters are enclosed. Frank DePay, Electrician, of Greenfield, with 1,500 meters, is changing to new sequence at the rate of 10 indoor an 50 outdoor per year. When theft is discovered, service is discontinued until new-sequence service is installed.



OUTDOOR METERING
Showing the socket-type meter at the left and the old meter protected by a metal box at right

C. C. Dudley, Plant Superintendent of the Light and Water Department, Greenfield, Iowa, with only 750 meters, is changing 100 meters per year to outdoor new sequence. Socket-type meters are installed for all new customers and on 90 per cent of the change-overs. On the remaining 10 per cent, the meter is enclosed in a box. Theft is not serious, less than it was a year ago, and new sequence has decreased it.

H. G. Smith, Superintendent of the Board of Public Works, South Haven, Mich., with 2,287 meters, reports that theft is not a problem, new sequence is used only when necessary to increase size of service, and all the meters are A-type (bottom-connected) in enclosures.

Glen D. Hayworth, Plant Superintendent, of Crawfordsville, Ind., with 4,000 meters, says theft of current is a problem to the extent of 1 per cent each of the residential and the commercial customers, and he is changing meters to new sequence at the rate of 10 per cent indoor and 40 per cent outdoor. The new socket-type meters are used in all new installations except for power, when A-type bottom-connected are used. There are 250 S- or socket-type meters in service and 40 A-type. In changing over old installations the S-type or socket meter is installed in 15 per cent of the cases.

Thomas F. Grogan, Plant Superintendent, of Olyphant Borough, Pa., reports that while theft is serious, it is not increasing, and the penalty is $50 fine plus another $50 to cover cost if installing a new meter, cabinets and service lines. Change-overs have just started, and in September 100 meters were changed to new sequence and enclosed in outdoor cabinets.

F. E. Morgan, Plant Superintendent, of Longmont,

Colo., with 3,000 meters, says theft is a growing problem, and that all outdoor meter connections are enclosed. The penalty is a fine by the City Council, and the service is disconnected until the fine is paid.

S. P . Tobin, Superintendent-Treasurer of the Municipal Water and Light Department, Camden, S. C., with 1,200 meters, reports that theft *was* a problem. Three years ago he "changed 500 meters and moved metering to pole, and picked up 26,000 kilowatt-hours in losses over the previous year." All new meter connections are enclosed. He says: "All new installations go to pole except in the business district, and even there we go to pole metering when line is behind stores."

As with many totally different municipal problems, the statistics on the subject are so meager as to be valueless except as a feeble indication of the probable prevalence of a loss of revenue which in many instances undoubtedly reaches serious proportions.

If tampering with the meter or jumping the service switch or service wires in order to prevent the meter from recording the current being used by the customer were invariably detected and effective prosecution followed, the practice would long since have ceased. But this just does not happen. Most of the cases of theft are not discovered, and few that are discovered are brought to court.

During the last four years there have been reported by private power companies 150,000 known cases of current diversion. Of the 816 cases that are known to have been prosecuted, 516 convictions were obtained. It is fairly obvious that only hard-and-fast and flagrant cases are sent to trial. Not only has experience shown the difficulty of obtaining convictions, except on practically incontrovertible evidence, but the policies of both the companies and the municipal utilities are opposed to prosecution.

These 150,000 cases reported during the last four years may be a drop in the bucket. The figure for 1933 was about 60,000 known cases by companies serving 9,000,000 meters. While this is less than 1 per cent, there are reports of communities where this gyping is practiced by 15 to 20 per cent of the customers. Hence the growing popularity among meter men of outdoor new sequence metering, where the meter is not only isolated from the customer's property, but is obviously outside his jurisdiction and is closed up tight besides.

Work or Doles—Wisconsin's Answer

By PHILIP F. LaFOLLETTE
Governor of Wisconsin

DURING the past five years we have adopted many humane and desirable proposals. But the fact remains that we have all been following one basic policy. We have been waiting for the depression to end and for prosperity to return. As we have waited, we have supported an increasing part of our human and natural resources in idleness. We have done so in the hope that something would restore these resources to useful work.

But if we do not work, we do not produce. Unemployment—unemployment of men, of factories, of machines, of land, of money—has drastically reduced our total income. We have produced less, and we have less to go around. We have been humane about it. We have paid doles to these unemployed people, factories, machines, land and money. Our income has been reduced, but we have had to pay more and more out of that reduced income to support all this unemployment. At the end of each year, the citizen, as well as his government, has had to reduce his expenses in order to provide the cost of doles.

Unless something unforeseen happens, a continuation of this course will produce the same result next year, only in a more aggravated form. If we go on reducing wealth, we shall be sharing poverty and not wealth in America. The time has come for a fundamental change. From now on, our objective must be the production of wealth and not its reduction. The principal business of government must be seeking ways and means of increasing the total income of all of us, and securing a fair distribution of that income among all of us.

When the Legislature of Wisconsin has passed the state budget bill, I shall submit in detail two plans: one to balance the state budget by following this policy of destructive reduction; the other, which I shall favor and fight for—to balance our state budget and balance *your* budget out of the increased wealth we must create if we all go back to work.

I propose: First, that for the old, the young, and the sick we shall provide as generously as our circumstances will permit. Secondly, for all the rest of us, that we shall go back to work—back to earning our own livings—back to work, increasing our own individual incomes and thereby increasing the income of the whole community.

We in Wisconsin not only believe, we *know*, there is plenty of work for the people of this state. We have completed a survey of Wisconsin that reaches into the problems of every community in the state and is the result of five years of detailed study. This survey is no doubt typical not only of Wisconsin but of every other community and state. It does not include all the work that could be done, but it does answer once and for all those reactionaries who claim we have no work for the unemployed.

This program will cost money. But it can be financed through the joint efforts of the Federal, state and local governments. The first year it will take more money than to keep people on the dole. But here is the essential difference: When we support people in idleness, we get nothing back. When we pay people for work—either for the government or in private employment—we get something in return for our money. *What* we get in return will be large or small, depending on whether the work is wise or foolish. It is like planting crops. If we plant good seed in fertile soil and have a good season, the harvest gives us back far more than we plant. If we do no planting, we get no crop. "As we sow, so shall we reap."

One hundred and fifty years ago America was the land of opportunity. Every boy and girl grew to maturity under the inspiring assurance of a real chance in life. America did not pamper people but did give them a real opportunity to run the race of life on their own feet. This is what we must have again and shall have again when we go back to work.

A work program must be large enough to enable the government to supply work for every able-bodied person who wants it. We must wipe out this distinction between those on relief and those off relief. Everybody who is capable and willing must have a chance to work. In this way alone can we restore self-respect and our own confidence in our ability to earn our own living.

—From a radio address over a National Broadcasting Company network, March 8, 1935. Among the kinds of work waiting to be done, as outlined in this challenging talk by Governor La Follette, are the conservation of natural resources, reforestation, building and modernizing of homes, street and highway construction and repair, rehabilitation of worn-out water sewerage and utility systems, and facilities for better education.

THE FIVE-FOOT CONCRETE LETTERS ON THE GRASS SLOPE ADMIRABLY ADVERTISE THE WORCESTER, MASS., PLANT

Making the Most of Sewage Plant Visitors

By **ROY S. LANPHEAR**
Supervising Chemist, Sewer Department, Worcester, Mass.

VISITORS at the Worcester, Mass., sewage treatment plant include engineers, students and interested citizens. The technical visitor generally makes himself known at the plant office. The register is signed and the visitor is given a copy of the technical description of the plant, a copy of which is reproduced at the end of this article. If the last annual report of the Superintendent of Sewers is available, this visitor is also presented with a copy of it. Usually, the operation data are given to the visitor during the inspection trip about the plant.

The engineering student visitors are usually accompanied by a professor or instructor and are also given copies of the technical description of the plant. During late years we have not been able to present these students with copies of the Annual Report of the Superintendent of Sewers. It is the practice that the head of the party signs the register and records the number of students. The engineering student visitors include classes from Massachusetts Institute of Technology, Harvard, Worcester Polytechnic Institute, University of Maine, University of Hampshire, Tufts, Northeastern University and Massachusetts State College.

Student nurses and high school students, as well as lay visitors, are given copies of the non-technical outline of plant operation, a copy of which is also reproduced herewith. The purpose of this outline is to present to the visitor a word picture of what the plant operation accomplishes and what it costs to do this work. The effectiveness of the work as concerns lack of odor nuisance and the good appearance of the plant is left to the visitor's observation.

The inspection trip through the plant, which generally requires about 1½ hours with student groups, is made in company with the Supervising Chemist, who plans his explanations according to the student groups and their questions. Many times the answers to these questions make a more lasting impression than a talk which may seem "cut and dried." As a rule, the engineering students are always ready with many questions as to details, and to forestall repetition on the part of inattentive students, plant operation is presented together with fundamental data before the student group is given the opportunity to ask questions.

With few exceptions, the plant inspection by the lay visitor is one of chance rather than intent, and its duration and thoroughness are always left to the visitor. The questions are answered as simply as possible by giving a general idea of the operation of the plant. The existence of such an installation as to size, freedom from odor nuisance and clean and neat appearance generally brings forth expressions of surprise from the visitors. At the close of the visit it is always emphasized that the Superintendent of Sewers and the Supervising Chemist hope the plant setting will, in the near future, be similar to that of a municipal park. The visitor may or may not be a local taxpayer, but a lasting impression is made when the annual operating cost is mentioned as being less than 25 cents per person per year.

The Technical Description

SEWAGE TREATMENT PLANT, WORCESTER, MASS.

Design and Construction

Type of Plant: Grit chambers, bar screens, Imhoff tanks, dosing tanks, trickling filters, secondary settling tanks, sludge drying beds.

Change: Nov., 1930. Evers-Sauvage mechanically raked bar screens.

Construction: 1919 to 1925. *Operation started:* June 25, 1925.

Basis of Design: 28 mgd; 242,000 population in 1934.

Approximate Cost: $3,800,000; $135,000 per mgd capacity; $15.70 per capita (design).

Sewage Flow

Population: 1930—196,395; est. served—190,000.
Sewer System: 36% combined plan; 64% separate plan.
Sewage Flow: Average, 22 mgd; max. rate, 68-70 mgd. Dry weather average, 18 mgd; 1930 (abnormal), 15 mgd.

Outfall Sewer

Length: About 2.1 miles. *Diameter:* 72 in.

Grit Chambers (2)

Length: About 75 ft. *Width:* 8 ft. above center line of sewer; 8 to 7 ft., center line to invert of sewer.
Pit: 7 ft. wide; 33 in. deep at inlet end, 48 in. at outlet end.
Velocity of Sewage Flow: 0.8 to 1.28 fps—15 to 60 mgd rate.
Method of Cleaning: Flushing; Autocrane.
Grit Disposal: Adjacent area as fill.

Bar Screens (2)

Type: Evers-Sauvage mechanically raked bar screens.
Bar Spacing: 1¼ in. in clear. *Inclination:* 45 degrees.
Motor: 2-hp *Westinghouse. Rake:* 1 revolution, 75 sec.
Screenings Disposal: Burial in adjacent low area.

Inverted Siphon

Length: About 2,200 ft. *Below Hydraulic Gradient:* 24 ft.

Venturi Meter

Length: 72 x 30 in. *Register:* Type M, register, indicator, recorder.

Imhoff Tanks (12)

Plan: 61 x 90 ft. *Depth:* 31 ft. *Total Depth:* 33 ft.
Gas Vent Area: 21% tank area; 3—36-in. and 2—19-in. each tank.
Sedimentary Compt: 4 each tank; total capacity 2.43 mg.
Bottom Slope: 1.5 on 1.0.
Slot: 8 in.; horizontal overlap of slopes, 6 in.
Detention Period of Sewage: Design, 28 mgd—2.1 hrs.; 22 mgd—2.7 hrs.
Sludge Compartment: Total capacity, 615,600 cu. ft.
Capacity: 2.54 cu. ft. per capita—242,000 population.
Hopper Bottom: 2 rows, 3 hoppers each. *Bottom slope* 1.0 on 2.0.
Sludge Pipe: 8-in., C.I.
Agitators: Perforated 2-in. water pipe system on hopper slopes.

Dosing Tanks (2—4 *Pairs*)

Plan: 30 x 30 ft. *Depth:* 7.36 ft. *Head on Nozzles:* 7 ft. to 1 ft.
Siphon: 36 in. *Capacity:* Each tank, 37,600 gals.
Time of Discharge: 3 min. *Time to Fill:* 7.7 min.—28 mgd.

Trickling Filters (4 *Units*)

Area: 13.68 acres; 752.5 x 792 ft.; 4 units, each 752.5 x 198 ft.
Material: Depth, 10 ft. Size, 3″ to 1¼″. Kind, "A" bastard granite; "B, C, D" trap rock.
Distribution System: 54-15-in. Lock Joint concrete pipe.
Laterals: 8- and 6-in. C.I. pipe.
Nozzles: Worcester type; 13/16-in. orifice; spacing 15 ft.; 2,996.
Drainage System: Block on edge, resting on ridges, floor flat (slope 0.5%).
Main Drain: 752.5 ft. long, center line of each unit.
Rate of Filter Operation: Design, 28 mgd—2.05 mg per acre per day. 22 mgd—1.61 mg per acre per day.

Secondary Settling Tanks (4)

Plan: 60 x 120 ft. *Depth:* 15 ft.—7 ft. in hopper bottom.
Capacity: Total: 2.225 mg. *Vertical Section:* 1.723 mg.
Detention Period: 1.47 hrs.—28 mgd. 1.88 hrs.—22 mgd.
Hopper Bottom: 4 rows of 2 hoppers each, 30 x 30 x 7 ft. deep.
Sludge Pump: 5-in. Fairbanks-Morse trash. Motor: 15 hp.; 1,165 rpm.

Sludge Drying Beds

Area: About 22 acres; ten—0.5-acre units; seventeen—1.0-acre units; one—0.7-acre unit.
Construction: Old intermittent sand filters formerly used for sewage; no improved material or underdrainage.
Area per Capita: About 4.8 sq. ft.
Disposal of Dried Sludge: Low area adjacent to drying beds.
Method of Removal of Dried Sludge: (1) Barber-Greene loader; (2) forking.
Winter Disposal of Wet Sludge: Lagoon.

The Non-Technical Description

CITY OF WORCESTER SEWER DEPARTMENT
John H. Brooks, Jr., Superintendent

Sewage Treatment Plant Operation

The sewerage system carries all of the house wastes discharged through the plumbing system to the sewage treatment plant. About 30% of this part of the sewerage system (older portion) also carries gutter water with the sewage.

Sewers solely for surface water, discharge storm water into various bodies of water throughout the city; principally Mill Brook storm-water sewer, which discharges into the Blackstone River at Millbury and Ballard Streets.

Outfall sewer—Brosnihan Square to the sewage treatment plant—72 in. diameter.

* * * *

Plant Units (No.)—Function

I. Grit Chambers (2)—Remove sand and grit from sewage.
II. Screens (2)—Remove coarser floating materials from sewage that will make unsightly conditions in Imhoff tanks.
III. Imhoff Tanks (12)—No. 1. Remove approximately 55-65% of the finer suspended matters from the screened sewage. No. 2. Hold these solids in the lower compartment while anaerobic bacteria digest the organic portion. Resulting solids are drawn as *sludge* at various intervals of time.
IV. Dosing Tanks (8)—Method of providing uniform distribution of the partially clarified sewage upon the trickling filters.
V. Trickling Filters (4)—(13.68 acres)—Purification of the clarified sewage by means of bacteriological nitrification and oxidation of the organic matter in solution and in suspension.
VI. Final Settling Tanks (4)—Remove suspended matters from the effluent from the trickling filters—giving a satisfactory effluent, which is discharged into the Blackstone River.
VII. Sludge Drying Beds—Sludge from the Imhoff tanks and final settling tanks is dried on sand beds; removed in part by farmers and others for use as fertilizer, and the remainder is removed to low areas as fill material.

* * * *

Sewage.—Wastes from toilets, wash-bowls, bathtubs, showers, sinks and wash-trays. Industrial wastes from practically all shops and factories in the city; these include lime liquors, spent acids, dye stuffs, wool washings and fats and greases.

Final Effluent.—Clear, colorless, practically odorless. It can be held indefinitely in a closed bottle at 68° F. (room temperature) without developing disagreeable or offensive odor.

Laboratory Control.—Daily samples, made up of hourly portions, are collected at four places in the plant. Results of tests check the changes of plan of operation; they furnish a record of plant accomplishment in treating the sewage. Regular weekly check made of river conditions, tests made and the results recorded. These records serve as the sole evidence for protection in case of any litigation concerning plant operation. A plant operation record is maintained as evidence of work performed to accomplish the above results.

* * * *

Quantities Handled: Normal: (averages).
Sewage: Million gallons daily—17,540,000—23,790,000.
Sludge: Gallons annually—11,860,000—22,630,000.
Dried Sludge: Cubic Yards annually—12,000—15,000.

* * * *

Operation Requirements.—Plant kept in a clean condition; plant surroundings maintained in good appearance; a final effluent which is stable or non-putrefactive; plant operation without nuisance to adjacent property-owners.

* * * *

Cost of Plant: $4,500,000, or about $23.60 per person.
Capacity of Plant: 28,000,000 gals. per day (average).
1934—Quantity of sewage (daily average): 21,380,000 gals.
1934—Operation Cost: $34,079.03, or approximately 17.5 cents per person per year; 1.5 per person per month.

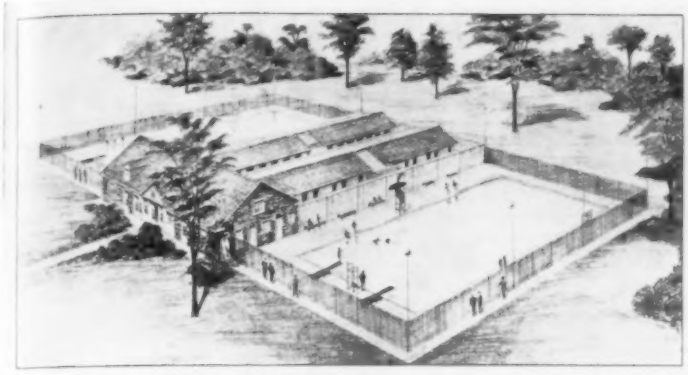
* * * *

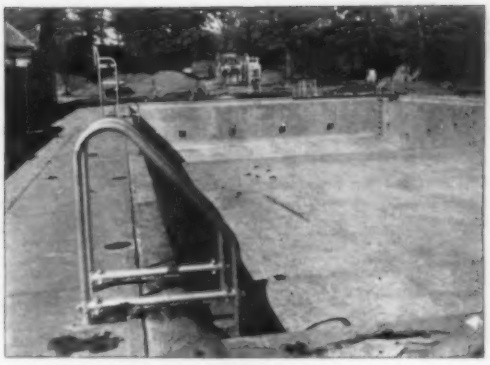
Invitation: A cordial welcome is extended to all persons to visit the plant, where all of the sewage and much of the industrial wastes of a community of nearly 200,000 inhabitants is cared for. A view of the plant from the new Southern Bypass state road will prove of interest.

Advertising the Plant

Two years ago, a new state highway was constructed so that it winds around three sides of the Worcester sewage treatment plant, being located from 300 to 600 feet from the buildings, tanks and filters. This highway is a cut-off from Worcester traffic and connects two parts of the main highway from New York, Hartford and Springfield to Boston. An excellent view of the plant is afforded the westbound traffic as it descends a long hill and crosses a fill, with little or no obstruction to the view. While a neat black and gold sign is located at the entrance road at the west side of the plant, the discovery of some abandoned concrete letters in a local dumping area by the Superintendent of Sewers led to an ERA project of making the missing letters and placing the name "Worcester Sewage Treatment Plant" on the bank at the dosing tanks. The letters are made of reinforced concrete, 6 inches thick, 5 feet high, painted with aluminum paint and held in place on pieces of old car rail supported on concrete posts. The original letters came from a grass plot located between the tracks of the Boston trolley cars in Worcester.

John H. Brooks, Jr., is Superintendent of Sewers, and the Supervising Chemist is in charge of sewage treatment plant operation.





PLAN OF SWIMMING POOLS AT GENESEE VALLEY PARK, ROCHESTER, N. Y., AND ONE OF THE POOLS

Three New Pools for Rochester, N. Y.

THREE municipal swimming pools built by TERA last year at Rochester, will be open for bathing this coming summer. They consist of a unit of two pools, one for men and one for women, at Genesee Valley Park, and one pool for mixed bathing at Seneca Park. The sites were chosen for natural drainage and accessibility, and the parking areas were laid out to preserve the beautiful settings. The pools are of the same dimensions: 45 x 105 feet, with 3 to 7 feet of water, totaling 180,000 gallons each for 385 bathers. The duplex pools cost $100,000 and the single pool $47,000, with about 54 per cent for labor. Work started in December, 1933, in 3 feet of frost. Spoil was excavated by hand and rolled out in wheelbarrows, at a cost of $2.25 per cubic yard.

The buildings are of Colonial type, with concrete walls faced outside and inside with brick. Toilet partitions, key cabinets, dressing rooms and lockers are of steel. Ceilings are plastered and roofs are covered with asbestos shingles. To prevent cracks from temperature changes, expansion joints are built in walls and floor 40 feet from the deep end of the pool. The joints are calked.

The scum gutters, designed in two pieces, are of terra cotta and extend around the entire pool. The edge serves as a hand-hold for bathers. A cement runway 14 feet wide extends around the pool, with a 6-inch concrete gutter outside the runway. On the other side of a picket fence 7 feet high is a spectators' walk.

Floodlights on high pipe standards illuminate the pool area, with 26 Aqualux underwater floodlights in each pool. Luminaires on Hollowspun granite standards light the walks, roadway and parking spaces.

To insure pure water without waste, the "recirculation and chlorination" method was adopted. Pool water is continually pumped through two outlet drains and a hair catcher. The latter is chiefly to protect the circulating pumps. On the suction side of the pump, the sterilizing solution is fed into the line; the sterile water passes through the pump, is treated with a small amount of coagulating alum, and is then forced through a strainerless pressure type filter and on into the pool through ten inlet fittings equally spaced on three sides of the pool. Fresh water is added only to replace the losses from splashing into the scum gutters. Thus, without waste, the water is kept fresh for an indefinite period and the pool in continuous operation.

The active sterilizing agent is chloramine, which is formed by the mixing of liquid chlorine and anhydrous ammonia, controlled through appropriate apparatus, and water. The chloramines are odorless, non-irritating, and more stable than chlorine solutions.

Each pool has equipment for testing the chlorine content of the water, and check-ups will be made several times each day. The instrument is a Hellige type comparator, which is also equipped with color discs for determining the pH value of the water in order to maintain proper alkalinity (pH between 6.8 and 7.4).

Material too heavy to remain suspended, and thus captured by the hair catcher, is removed without draining the pool by use of a cleaning tool consisting of a brush with a nozzle similar to that used on a vacuum cleaner.

Sources of some of the equipment and materials are:

Filter by Cochrane Corp.
Chlorine and ammonia control apparatus by Wallace & Tiernan Co.
Cleaning tool by United Electric Co.
Double-suction, horizontal, split casing, centrifugal pump by Fairbanks-Morse Co.
Lifeguard chairs, springboards, ladders, by Hill Standard Co.

Two Wisconsin Pools

LANCASTER and Platteville, Wisconsin towns of 2,400 and 4,000, have with CWA labor provided themselves with new swimming pools, which were opened last summer.

The Lancaster pool is 60 x 130 feet, contains 332,000 gallons, and cost $20,000, of which 60 per cent went to local labor. The city's share of the construction cost was $5,000. The first six weeks' operating cost was $250; revenue, $800. Use of the pool was encouraged by low fees and two free mornings per week. Attendance, 200 daily; peak, 577 on August 15. The water, from the city plant, is filtered and chlorinated.

The Platteville pool is 60 x 150 feet, depth 2½ to 10 feet. Operating cost was $724 the first month; revenue, $1,107. Average attendance, 350 per day; 1,100 the first day. Monday and Thursday mornings free to school boys; Tuesday and Friday mornings to girls. The water is treated with chlorine and copper sulphate.

IMPROVING MUNICIPAL ADMINISTRATION

Current Items from the
Public Administration Clearing House

Large Cities Eye City-County Consolidation

DEFINITE movements to reorganize complex governmental set-ups are now under way in more than half of the 41 cities in this country with populations of 200,000 and over, according to a survey made by Robert M. Paige, Secretary of the Governmental Research Association. Reorganization proposals under consideration would give the county governments containing these cities executive heads, rearrange and consolidate city departments, and take steps toward the consolidation of city and county governments.

A review of proposals currently receiving attention in each of these cities reveals that in:

New York City.—Mayor has appointed a city charter revision commission which is considering the city-manager form of government. Consolidation of city and county government will be possible if voters approve a constitutional amendment to be considered this coming fall.

Chicago.—City Club and an independent candidate for mayor are advocating the city-manager form of government. Last year Chicago consolidated 26 park districts into 1.

Philadelphia.—Movement for a new state constitution is seen as an opportunity to consolidate city and county and provide home rule powers under which a city-manager form of government can be adopted.

Detroit.—Campaign continues for county home rule which will permit the assumption of many municipal services by Wayne County and eliminate some of the 145 independent units now operating within the county.

Los Angeles.—The semi-official Committee on Governmental Simplification has recommended extending the practice of turning municipal functions over to the county on a contract basis, thus eliminating duplicating service departments.

Cleveland.—An official County Charter Commission is preparing a modern form of government for the county.

St. Louis.—The League of Municipalities of the county has presented to the Legislature a resolution calling for a law permitting the creation of a centralized system of government in the county.

Boston.—Mayor has secured authority to consolidate city offices and bureaus into eight major departments.

Pittsburgh.—Metropolitan Plan Commission is drafting a charter for Allegheny County which will unify the governments in this area. The Civic Club has submitted a city-manager bill to the State Legislature.

Milwaukee.—Official joint city-county committee on consolidation recommends giving the county exclusive power to perform eight important municipal functions.

Buffalo.—A county charter revision commission is at work.

Minneapolis.—The Charter Association has presented a draft of a new city charter.

New Orleans.—The Bureau of Governmental Research is working on a plan for a new city charter.

Cincinnati.—Official charter commission is preparing a centralized form of government for the county.

Kansas City.—Interest is being shown in the plan of consolidating county offices into three major departments worked out by the presiding Judge of the County Court.

Seattle.—Municipal League is advocating the city-manager form of government. A bill has been introduced in the State Legislature calling for a constitutional amendment providing for county home rule and city-county consolidation.

Rochester.—An official Charter Revision Commission is working on a new charter for Monroe County.

Louisville.—The city has engaged a staff of specialists to conduct a survey of city departments and to make recommendations for needed rearrangements.

Portland.—The City Club is advocating the city-manager form of government.

Toledo.—An official County Charter Commission is at work.

Oakland.—Study of governmental relationships in the San Francisco Bay region is being made by the Bureau of Public Administration of the University of California.

Birmingham.—City-county consolidation has been brought to the fore by the Governor, who favors this step.

Omaha.—Citizens are awaiting with interest the establishment next year of the county-manager form of government, which they adopted last November.

Syracuse.—A city-manager campaign is under way. The plan will be voted on in April.

Newark and Jersey City.—Princeton University experts will soon begin a study of governmental relationships in these two cities, among others in New Jersey.

Utility Rates Going Down

EFFORTS exerted by public agencies to cause reduction in rates of privately operated utilities are bearing fruit in a number of sections of the country, according to the March issue of the *United States Municipal News*, published jointly by the American Municipal Association and the U. S. Conference of Mayors. Reductions have been sought directly by utility or corporation commissions, or through proposals by municipalities to engage in their own manufacture of gas or electricity.

In Virginia, rate reductions authorized by the corporation commission will save users of electricity an estimated total of $200,000 this year. "Further electric-rate reductions," reports the municipal newsletter, "are taking place in all sections of the country; for instance, in Pittsburgh, Pa., in Dayton, Ohio, ($283,-157 reduction), Massachusetts (15 towns) and Illinois (52 cities and towns)."

On the other hand, several cities are considering building and operating their own utilities. San Antonio, Texas, is considering operation of its own gas plant, should it fail to secure the lowered rate it is seeking. The St. Louis Board of Aldermen is investigating possible sources of a larger and cheaper supply of natural gas.

A resolution has been introduced into the Rochester, N. Y., City Council directing the Public Works Commissioner and the Council's Public Utilities Committee to study and report on the advantages, disadvantages, cost of building, acquiring and operating a city-owned gas plant. Mayor Thacher of Albany has signed a bill authorizing the appointment of a public utilities commission to maintain and operate a municipal electric service, and the issuance of $10,000,000 in bonds for the project.

As evidence that disparities exist in the same areas between the rates charged by municipal plants and those which are privately operated, the Federal Power Commission's recent preliminary report on typical bills for domestic use of 40 kilowatt-hours of electricity is cited. In Cleveland, the bills were as follows: municipal, $1.31, private, $1.60; Columbus, municipal, $1.58, private, $1.95; Kansas City, Kans., $1.60, Kansas City, Mo., $2.30. The typical municipal bill in Los Angeles amounted to $1.81, whereas the San Diego householder paid $2.51. In 49 cities over 100,000 population, Cleveland's municipal rate was the lowest, and Miami, with $4.18, was the highest.

Old-Age Security for Municipal Employees

WITH no provision made for them in the proposed social security program, municipal employees face a serious situation, says Rowland Egger, Director of the Bureau of Public Administration, League of Virginia Municipalities, who advocates a pension system for all local government workers.

Writing in the March issue of *Public Management*, Mr. Egger points out that there are approximately 591,000 municipal employees in the United States, excluding those in the public school systems. Less than 241,000 of these—about 41 per cent—are covered by existing municipal pension systems. Less than 138,-000 belong to pension systems with actuarially sound funds, he estimates, which means that probably only 23 per cent have a fair chance to receive pensions. The other 73 per cent may be "kept on" at a loss to the city after their capacity for useful service is over, or they may be transferred to lighter duties; they may be summarily dismissed or retired by special ordinance, Mr. Egger asserts. In view of low salaries, possibilities of individual provision for old age are now, and doubtless long will remain, merely illusory, in his opinion.

Mr. Egger's arguments for establishing a pension system, from the standpoint of government, are that: (1) it would decrease the cost of maintaining the unfit employee in service by retiring him on a pension jointly accumulated by himself and his employer—the government; (2) it would improve the morale of the active employees by increasing their chances of promotion and securing them against old-age worries; (3) it would attract and retain in the public service men who would otherwise seek the assurance of governmentally enforced pensions in private employment.

At present approximately 225 out of 260 cities of the country with 30,000 population and over have some sort of pension plan for their employees, but only 36 report that they are on an actuarial basis.

The Value of a Highway Plan and Program to a Municipality

By JOHN NOLEN, JR.
Director of Planning, National Capital Park and Planning Commission

A MODERN highway plan applies to both existing and proposed street systems. It seeks to provide for the economic and appropriate use of land, to consider future as well as present needs, and to adapt the system to a variety of services. The highway plan, therefore, must be related to a general plan of city development, having regard for public buildings and parks, the location of business centers, and the types of neighborhoods served, and must be adapted to such controlling natural features as topography, stream valleys, and the larger watercourses. It should ensure the continuity of streets and establish in advance of development suitable widths, alignment and grade for rendering safe and convenient service. Finally, a highway plan is the necessary base for the program of development.

A highway program is a well-considered schedule for physical development to meet the needs of a community, having in mind the economical use of whatever funds may be available. The value of a program based on a plan is that it has a definite end in view and usually aims to accomplish progressively over a period that may extend for several years what would be impossible to obtain without systematic and coordinated planning. A well-thought-out program is a measure of economy and essential for effective operation within budgetry limitations.

The Experience of the District of Columbia

Washington has always been famous as a planned city, and, during modern times, for its wide, well-improved streets and avenues lined with fine trees, its imposing public buildings, parks and parkway roads, and beautiful suburbs. What has been accomplished in the National Capital should be of special interest and example to the whole nation, especially the methods by which these results have been obtained.

Washington began with a highway plan conceived by Major Pierre L'Enfant as an original scheme adapted to the site and destiny of the Federal City. The plan, covering about one-tenth of the original 10-mile square, was adopted by Congress, and by agreement with the original proprietors more than half of the planned area was conveyed to the United States for streets and alleys. While the proportion of the property set aside for streets is much larger than that which prevails in most American cities, subsequent development of the National Capital (where today there are 2.8 persons per automobile) has fully justified the great foresight shown by L'Enfant and President Washington.

The system of streets laid out was a varied rectangular scheme, overlaid by a system of diagonals connecting the most important sites and intersections first designated for future public buildings and squares. Several of these diagonals followed the old roads providing convenient connections to other communities. The street widths ranged up to 160 feet, which is the width of the most important avenues and streets.

L'Enfant's plan sufficed for the growth of Washington up to the end of the Civil War. During the 25 years following 1866, the population doubled, and extensive areas were subdivided outside the original city plan without any control whatsoever. Commenting on one of these subdivisions, the Commissioners in their report for 1887 made the following statement:

"The streets go nowhere and connect with nothing. They are narrow and not even straight within the limits of the park itself. The designer of its plan seems not to have had a single well-considered idea, and if still in existence should not be again permitted to experiment with matters of importance."

There is every reason to believe that the poorly designed street plan referred to has been largely responsible for the premature economic decadence which followed in this particular neighborhood.

Bitter experience usually results in constructive action. Between 1893 and 1898 Congress enacted legislation establishing a Permanent System of Highways Plan for all the remaining undeveloped portion of the District of Columbia, providing that all subdivisions thereafter recorded conform to that plan. The plan was made to follow as nearly as practicable the plan of the original city. Streets were established at widths ranging from 90 to 160 feet. Of special interest was a provision subsequently made permitting changes in the plan whenever required to meet new conditions, to provide for institutional development, or to conform to topographical or other situations in the public interest. These changes are made by the District Commissioners after public hearings and forwarded to the National Capital Park and Planning Commission for approval.

The Value of a Plan

The value of the Permanent System of Highways Plan has been unconditionally proved by the ensuing forty years of experience. Most of the important radials in the original city have been extended with adequate widths to adjoining Maryland; circumferential routes have been provided, and the intervening sections subdivided in an orderly manner adapted to residential use. As it is usually in their interest, most subdividers of property dedicate highway plan streets, with the result that only where special conditions exist, primarily along the old roads, has condemnation been necessary. Even then the law provides that the benefits assessed may equal the damages. In this simple economic way the orderly and purposeful plan of L'Enfant has been extended over the whole of the District of Columbia, and ample provision has been made for future pavement widenings, sidewalks, and tree spaces and parking. Under suitable regulations property owners care for and treat the street parking reservations as their own front yards.

In 1926 the National Capital Park and Planning Commission was created and charged with the duty of developing and maintaining a comprehensive consistent and coordinated plan for the National Capital and environs. It was soon realized that, while the highway plan as a whole was excellent, some differentiation was needed in the functions of the 1,000-mile existing and proposed streets system. This was not only important in respect to making certain that the proper widths had been indicated on the plan, but particularly in order that construction and widening programs might accomplish the greatest possible benefit and be adapted to needs. Accordingly, a major thoroughfare plan was evolved designating certain radials, laterals, and circumferentials as routes to be improved for the movement of general traffic. This plan was coordinated with such other influential elements of the city plan as zoning, street-car and bus routes, and centers of traffic origin and destination. Particular attention was paid to the location of public buildings, markets, terminals, educational centers, and routes for traffic through the city, for which

several by-passes were proposed. The throughfare plan necessarily included certain proposals for new routes and connections not yet existing. Particularly notable were several new bridges, parkway routes, and high-level crossings over Rock Creek Park. While these proposals could not be officially adopted by the District Commissioners unless previously authorized by Congress, the plan has served to focus attention on the weaknesses of the existing system of highways and has resulted in subsequent constructive action in several instances. So far as consistent with existing conditions, the officially designated Federal and local highway routes are in accordance with the plan.

For the improvement of major thoroughfares, standard street cross-sections have been adopted and are followed whenever widening takes place. The least important thoroughfares were established at 40-foot pavement widths, and the most important at 56 to 60 feet, the latter difference depending on whether the street carried car and bus lines with loading platforms, and heavy commercial traffic requiring wider clearances. A few pavements are wider, such as Pennsylvania Avenue, 106 feet, Constitution Avenue, 80 feet, and 14th Street, 70 feet. New local residential streets are being paved 30 feet. One of the difficulties in realizing these standards has been the lack of foresight when trees were planted prior to the present extensive use of the automobile. Many fine tree-lined residential streets within the old city now needed for movement of general city traffic are limited to 32-foot widths, which is insufficient for two lanes of freely moving modern traffic, in addition to parking.

The Value of a Program

The long and satisfactory experience with an official highway plan prepared the way for the adoption of a definite coordinated program for scheduling highway construction and improvement work. Following the war, the unprecedented and rapid growth of suburban areas, and an increase of 328 per cent in automobile registration during the ensuing ten years made the need for a well-planned program most urgent. In 1929, a five-year program was formulated by the Highway Department of the District Government and became the guide for the items annually submitted to Congress for appropriation. Almost all the major projects scheduled were executed in this period, though not always in the order originally contemplated. The results of this practice were so satisfactory, however, that the Engineer Commissioner approved early in 1934 a new six-year program, which will in all probability be annually revised and kept up to date six years in advance. In this way adjustments can be made from time to time because of unforeseen conditions and provide the necessary flexibility to meet inevitable fluctuations in annual budgets.

A well-organized procedure has been adopted by the Department of Highways in reference to the coordinate scheduling of all underground utility work. Releases prepared in accordance with the program are sent out months in advance, describing the limits and character of the proposed highway construction or improvement, thereby eliminating delays and determining what adjustments in the program may be required. This practice reduces to a minimum the cutting of new pavements, saves expense to the utilities and to the consumer, and minimizes the inconvenience to the public by concentrating underground work on specific streets during limited periods.

A further very important advantage of the release system is that it gives ample opportunity to other divisions of the District and Federal Governments to plan any related work accordingly. For example, in reference to the functions of the Planning Commission, the scheduled work is plotted on the major thoroughfare plan, and recommendations are submitted as to desired adjustments in width, curb radii, etc., before working plans have been prepared.

While the value of a highway plan and program in ordinary times is obvious, the events and opportunities of the emergency situation presented during the last two years have firmly established the wisdom of the policy followed in the District of Columbia. The National Recovery Act, passed in June, 1933, made available unexpectedly nearly two million dollars. Over night, items in the advance program eligible for allotments were readily extracted to make up the general schedule required to be submitted to the Bureau of Public Roads. Releases were sent promptly to the utilities and other agencies affected which were already familiar with the advance program. Within six weeks from the passage of the Act, the first work was under contract, and on two subsequent occasions the same opportunity occurred and the performance was repeated. Because each project was part of a continuing, planned program, the public obtained not only quick relief for unemployment but well-considered benefits from the work done.

A modern municipal highway system must be planned and improved in relation to the systems of adjoining jurisdictions, many of which are as densely populated as some sections of the central cities. In Washington this need has been recognized through the formulation by the Planning Commission of a regional plan for the National Capital and environs, in which highways and parkways are the principal elements. To check this plan, covering an area over twenty miles from the Capitol, a regional traffic survey was undertaken in 1932 by the Bureau of Public Roads in cooperation with the many jurisdictions involved. The findings of this survey are now in the course of study, especially in relation to such major proposals as a Washington-Baltimore Parkway and a by-pass around Washington which will be a part of a great coastal highway proposed to extend from New England south around the great metropolitan centers between Boston and Washington.

—From a paper presented at the Convention of the American Road Builders' Association, Washington, D. C., January 23, 1935.

Realtors Campaign for Modern Housing Codes and Replanned Cities

INCLUDED in the 1935 program of activities and objectives of the National Association of Real Estate Boards, as presented under thirteen heads by Walter S. Schmidt, President, at the Association's annual business meeting in Houston, Texas, on January 24, were the following:

Advocate the adoption of acts in each state establishing minimum housing standards.

"We are overridden with hundreds of building codes, both state and municipal, which attempt to prescribe in detail how homes and all other structures shall be built. These codes reflect methods, in many cases, which have long been outgrown. Moreover, the building codes are shot through with provisions inserted by special interests. The result is that building and housing, in which we have a vital interest, is compelled to carry on burdened with a host of outworn ideas which add enormously to costs without compensating benefits in safety, health and convenience.

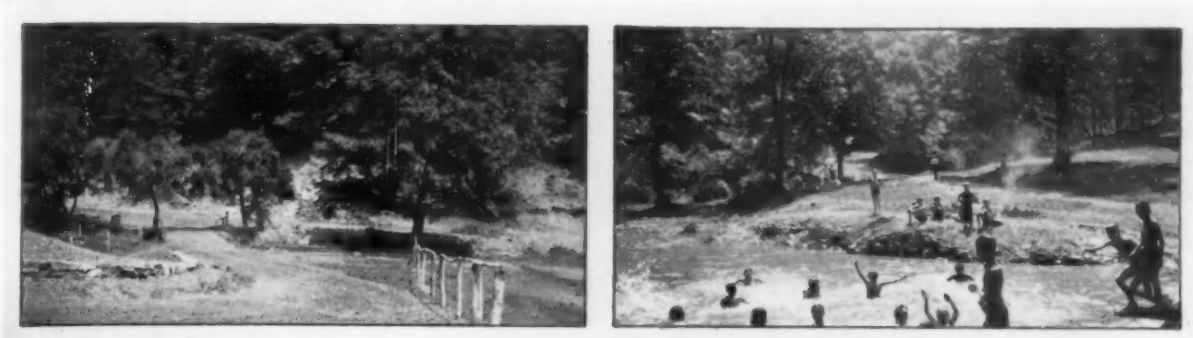
"To coordinate and simplify these local code we pla nto advocate the adoption by the various states of state housing acts which shall prescribe, in simple terms that every man can understand, the minimum standards with respect to sanitation, light, air, safety to which all structures to be occupied by human beings for dwelling purposes shall conform. Only such structures as comply with these standards should be permitted occupancy. Within such broad limitations local building codes can be coordinated and made more simple and the development of housing facilities can be permitted to function freely and make full use of the rapid recent developments and inventions in the field of materials and construction technic."

Encourage new effort in replanning our cities.

"Recent studies have shown that in the average American city, under city planning and zoning ordinances, many times as much property as can ever be used has been allocated for apartments, business, manufacturing and industrial purposes, crowding out and destroying home neighborhoods. The result has been what we know as 'blight.' This has led to flight from the city on the part of those who could get away into the suburbs where they could re-create home neighborhoods and maintain them. Only as sound and constructive replanning is accomplished can true confidence in much of our city real estate be restored."

FORWARD STEPS

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others



ENTRANCE TO STARKHOUSE PARK, JOHNSTOWN, WITH ITS OLE SWIMMIN' HOLE

A City That Knows the Meaning of Recreation

JOHNSTOWN, PA.—Through the foresight of past and present city administrations, and the benevolence of several public-spirited citizens, Johnstown has provided large recreational areas, both passive and active. By passive recreational areas I mean parks, drives, pathways, etc., which delight the eye and rest the mind, but do not require any active physical exercise; where a person may stroll, or be seated; where the mental point of view, rather than the physical, is taken into account. By active recreation centers I mean baseball and football fields, tennis courts, swimming pools, etc.

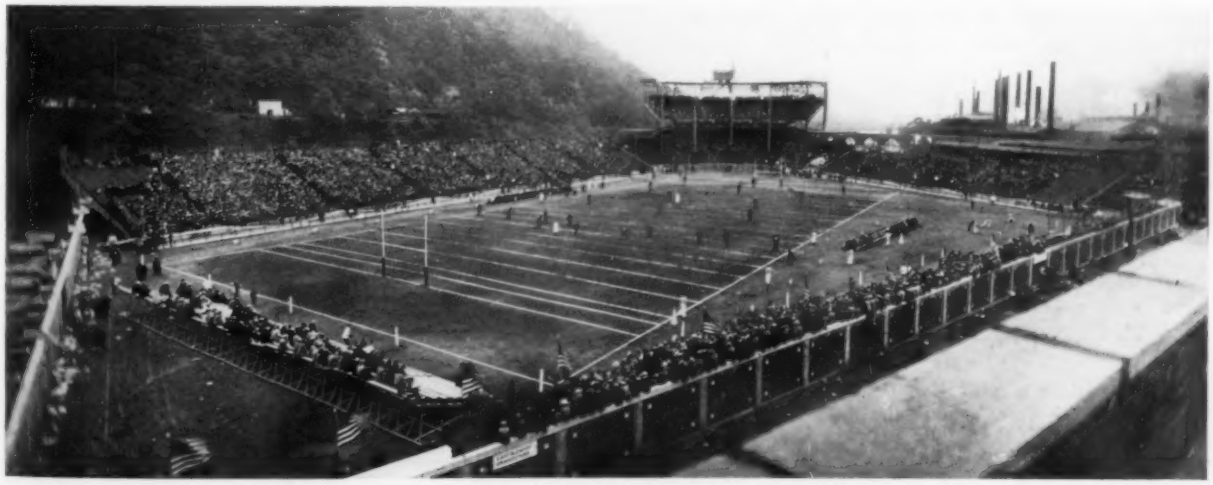
The Department of Labor, cooperating with the National Recreation Association, conducted in 1930 a study of municipal parks and playgrounds. According to the Association's figures, in 93 cities of 50,000 to 100,000 population the average park acreage is 387.82. Johnstown has over 600 acres. The standard set by the National Recreation Association is an acre of park almost for every 100 inhabitants. Johnstown, with a population of about 66,000 and almost an acre of park area for every 100 persons, ranks far above the average for cities of its size.

In the central part of the city are three large parks, well shaded, with fine, velvety lawns. Here are placed benches where people living in congested parts of the city can rest body and mind and enjoy the beauty of grass, flowers and trees. At various vacant corners of the city are beautiful shaded lawns. Along river-banks and on hillsides, flowers and shrubs are prominent, so that the once resting place for tin cans, garbage and offal is now permanently beautiful.

The picnic grove, known as Roxbury Park, containing some 138 acres, was described on page 44 of THE AMERICAN CITY for July, 1933. Each year thousands of people enjoy themselves in this attractive place created by relief labor.

Johnstown owns several hundred acres of woodland just outside the city limits. This was once a beauty-spot, but it became filled with underbrush and abounded in dead timber. In the spring of 1934, Carl C. Tinstman, who then was Director of Parks and Public Property, a very active official in obtaining and improving areas for public recreation, secured from the Federal Government a C.C.C. camp in Johnstown. Under the supervision of skilled landscape architects the Federal relief men made this vast unused woodland into something to be proud of. They cut down underbrush and dead timber. They built roads and shelters and cleaned the streams, and redeemed a once desolate tract.

Fulton I. Connor, who succeeded Carl C. Tinstman as Director of Parks and Public Property, last year, is following in the footsteps of his predecessor, by enlarging the scope of municipal recreational activities. During his short time in office, he had already evinced sincere



POINT STADIUM, JOHNSTOWN, PA.

MUNICIPAL SWIMMING POOL, JOHNSTOWN, PA.

interest in affording wholesome recreation to the people of Johnstown.

There are many areas in Johnstown that provide active recreation. Leading the list is the Point Stadium, for football and baseball, seating 20,000 people. In each ward there is at least one playground, in some two or three; a total of 11 acres. All these playgrounds are supervised by experienced directors. The city also owns a large swimming pool, and tennis courts. Besides all these municipally owned recreational facilities, there are many privately owned tennis-courts, swimming pools, horse-shoe pitching courts, etc.

MICHAEL M. CHUDY,
City Assessor.

The Diesel Plant at Culpeper

CULPEPER, VA.—The new municipal diesel plant that has been in operation half a year at Culpeper was favored for several years, petitioned by voters in 1932, and carried by 60 per cent on April 25, 1933.

Plans and surveys were made and an application to the Public Works Administration for a loan and grant of $160,000 was approved in December, 1933, for the construction of a complete generating and distribution system, including a power-plant building and improvements to the existing municipally owned water pumping station.

Subsequently, a modern diesel plant was constructed on the site of the old water pumping station. The original pumps, driven by diesel engine, were not disturbed during construction and today rest on their old foundations within the new building and serve as standby to the electric-driven pumps installed with the new system. The three diesel engine generators are rated as follows:

Two 400 bhp, 337 kva, 270-kw at 80% power factor
One 240 bhp, 200 kva, 160-kw at 80% power factor

The engines are of the slow-speed, heavy-duty, 4-cycle, solid-injection type manufactured by the De La Vergne Engine Co. The generators are of the direct-connected engine type manufactured by the Westinghouse Electric & Manufacturing Co. Energy is generated and distributed at 2,300 volts. The plant cost as follows:

Diesel engines	$61,680
Distribution and street lighting	39,472
Building	17,620
Wiring and switchboard installation	4,965
Switchboard	5,375
Water pumps, 1 high and 1 low head, 350 gals. per minute	1,261
Mechanical equipment and piping	11,689
Engineering, inspect., field, legal, etc.	19,566
Total	$161,628

Revenue and cost figures are available for only four months at present. Total receipts based on the four months' operation will amount to $55,000 yearly. Total disbursements will approximate $25,000. The total net income should therefore be $30,000. Operating expenses include salaries, fuel and lubricating oils, interest, depreciation at $1 per bhp, insurance and maintenance.

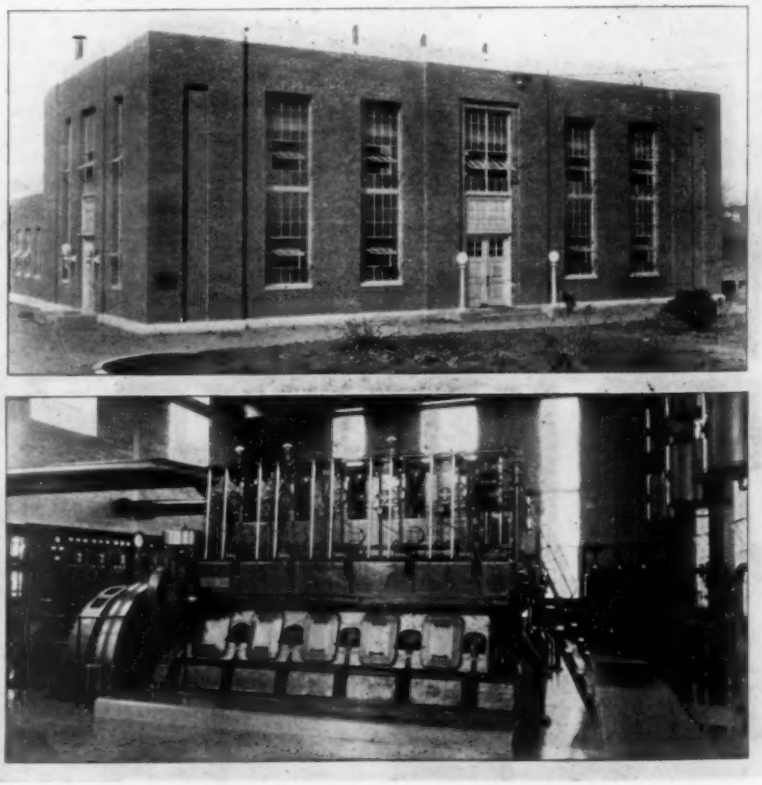
V. VON GEMMINGEN,
Town Manager.

Operating Efficiently "In the Black"

NORRISTOWN, PA.—When, on December 15, 1934, a municipal bond issue was sold in Norristown,* the borough obtained, it is believed, the lowest rate of interest—1.69 per cent—ever secured on bonds in the Commonwealth of Pennsylvania. This is a result of the borough's determination to maintain a balanced budget. Since the year 1931, Norristown's costs have been carefully supervised in order that the borough might keep its operating expenditures within its income. At the close of 1934, it was able to show an appropriation surplus of approximately $12,000, after operations.

During the year 1934 Norristown kept its buildings, plants, highways, sewers, parks, electrical circuits, fire, police, health and inspection services in good condition, and operating properly, to meet the public demand. It surface-treated 64,300 square yards of highway, rebuilt or conditioned 2,728 square yards, and with the aid of the county of Mont-

* Incorrectly spelled "Morristown" on page 72 of the January issue.



EXTERIOR AND INTERIOR OF CULPEPER'S DIESEL PLANT

gomery, constructed 30,926 square yards. It built 663 feet of sanitary sewer, and contracted with the Norristown State Hospital for treatment of the Hospital sewage, thereby eliminating an objectionable condition in the Elmwood Park area. Three fire-alarm boxes were placed, also seven fire hydrants and twelve street lights. Two pieces of fire apparatus were rebuilt, and an efficient fire prevention service was instituted. For the first ten months of the year the borough was able to maintain the lowest fire loss per capita, namely, 7 cents, of any year on the records. Portions of the City Hall Building were reconditioned.

One of the largest projects ever undertaken in the community was practically completed in 1934, except for some minor adjustments; namely, the grade crossing elimination, which involved expenditures of approximately $2,250,000, defrayed by the Pennsylvania Railroad, the Reading Railroad, the Commonwealth of Pennsylvania, the County of Montgomery, and the Borough of Norristown, which paid $450,000 of the amount. The accompanying photograph shows the present safe crossing conditions.

The per capita operating cost for the borough during 1934 stands at $6.59, compared with $8.84 for the year 1930, the highest of record. This approximately 25 per cent reduction in operating expense has been brought about through increased efficiency without impairing the essential services rendered to citizens.

F. LESTER SMITH,
Secretary, Borough of Norristown.

THE PRESENT SAFE RAILROAD CROSSINGS IN NORRISTOWN

Junior Chamber Campaign Stimulates Tax Payments

BUFFALO, N. Y.—This city has not been faced with as serious a back tax problem as many other communities, yet $6,000,000 of back taxes was owed the city on August 1, 1934.

The advisability of liquidating this sum was recognized by both the city officials and the Buffalo Junior Chamber of Commerce. Through the "Pay Your Back Taxes Campaign" conducted for the city of Buffalo by the Junior Chamber of Commerce in cooperation with Mayor George J. Zimmerman and City Treasurer James D. Hoban, definite results were accomplished.

Two plans were offered the property owner by the city for the payment of his back taxes—a cash and an installment plan. Briefly, the cash plan permitted those property owners whose tax sale certificates were owned by the city to pay the original amount of levy plus 6 per cent interest, providing the first half of the current 1934-5 taxes was paid at the same time. The installment plan provided for the payment of back taxes in five equal annual installments, all penalties and interest to be reduced 50 per cent when final payment was made, if all city taxes then due were paid. The city further promised not to foreclose for such back taxes if installments were paid on time.

These plans offered real advantages to the taxpayer who wanted to clear up his back taxes. But it was necessary to sell the advantages to him and this was accomplished by the tax campaign conducted by the Junior Chamber of Commerce in cooperation with the Mayor and City Treasurer. The campaign plans were drafted by and materialized in the hands of the Taxation Committee of the Junior Chamber of Commerce.

The organization of the campaign may be summarized in the following manner:

1. A survey was made of tax delinquency and methods employed to meet the situation in other cities.

2. Those delinquents owing over $1,000 and those owing less than that amount were classed into two groups.

3. A letter advising of the tax payment plans was sent to all delinquents by the President of the Junior Chamber of Commerce.

4. Those owing over $1,000 were personally interviewed by members of the Junior Chamber of Commerce.

5. The advantage of the cash payment plan to a mortgagee was pointed out to all banks and insurance companies. If the mortgagee would protect a particular investment on foreclosure, by purchase, all penalties and 50 per cent interest could be saved by loaning the mortgagor the cash required for payment of back taxes.

6. The publicity program included radio talks by prominent citizens, frequent press releases, newspaper advertisements and window displays.

One-half of the city's back taxes due on August 1, 1934, was liquidated by the campaign conducted last fall. The total back taxes owed the city on that date were $6,100,000, of which it has been estimated that $300,000 was uncollectible. During the campaign $1,700,000 of back taxes was paid in cash, and $1,200,000 pledged to be paid on the installment plan.

The property owners of Buffalo are now tax minded! This is partly evidenced by the fact that current tax collections for the first half of the current year exceed the same period for the year prior by $3,000,000. The campaign attempted to show the taxpayer that it was to his advantage to pay back taxes and to keep current taxes paid on time.

Mayor Zimmerman and other city officials considered the campaign a success. City Treasurer Hoban in a statement to the press credited the Junior Chamber of Commerce with "selling" the tax plan to Buffalo and enabling the administration to put it over.

DENTON A. FULLER, Jr.
Chairman, Taxation Committee, Buffalo Junior Chamber of Commerce.

Less Noise, Please!

PEACE and quiet may yet come to American cities through the enactment of anti-noise ordinances.

Utica, N. Y., is the most recent city to make it an offense to create unnecessary noises in public streets, as reported in the March issue of the *United States Municipal News*. All offenses against the new law are punishable by a fine of from $5 to $50. The measure is designed to prevent the use of loudspeakers and radio apparatus for street advertising, and provides for quiet zones within 150 feet of hospitals and schools. Albany, N. Y., passed a similar ordinance some time ago which bans the tuning of radios for volume instead of distance and puts the law on motorists who honk for the fun of it. These two American cities are following the example of London, England, whose Council six months ago hushed horns by charging motorists $10 a hoot, if they gave it within five miles of Charing Cross between the hours of 11:30 P.M. and 7 A.M.

Houston, Texas, has embarked upon a program of education in an attempt to decrease automobile honking. Polite policemen reprimand but do not arrest the noisy motorist. Grand Rapids, Mich., turned attention to noisy trains recently, passing an ordinance which outlaws promiscuous whistle-tooting, except at crossings.

The state of Wisconsin has statutes requiring motor boats in specified bodies of water to have mufflers; restricts the use of automobile horns to reasonable warnings, and prohibits sirens; and regulates the kinds of firecracker that may be sold and the time they may be used. New York City and Evanston, Ill., have recently put into use the noiseless milk wagon-rubber-tired wheels and rubber-shod horses—which guarantees to keep the noise of milk-delivery down to 68 decibels—not enough to annoy the ear.

SO LITTLE . . . SO LOVABLE

and so dependent on you

WHAT excitement there was when she got her first tooth. And her second! And now there are seven. Already she is making brave attempts to say a word or two.

Much of your life is given over to keeping her well and happy. For she is so little and lovable—and so dependent on you.

During the day and through the darkness of night you have a feeling of safety and security because of the telephone. It is an ever-watchful guardian of your home—ready to serve you in the ordinary affairs of life and in time of emergency.

In office and store and factory and on the farm the telephone is an equally important part of every activity.

The telephone would not be what it is today if it were not for the nation-wide Bell System. Its unified plan of operation has developed telephone service to its present high efficiency and brought it within reach of people everywhere.

An extension telephone in your bedroom, sun room, kitchen or nursery will save many steps each day. It insures greater safety and privacy yet the monthly charge is small.

BELL TELEPHONE SYSTEM

During April we hope you will remember to mention THE AMERICAN CITY

TRAFFIC CONTROL AND FACILITATION

Conducted by Publications Committee, Institute of Traffic Engineers, 175 Fifth Ave., New York

Paul L. Green, Chairman; Melvin J. Bankhead, James R. Guthrie, T. T. McCrosky, D. Grant Mickle, Robert A. Mitchell, Edward J. O'Meara, Miss I. K. Rolph, Peter J. Stupka, J. C. Vincent, John C. Wrighton

74 Cities Cited for No Traffic Deaths in 1934

IN a coast-to-coast competition of 600 cities—twice as many as the year before—Milwaukee was chosen Grand Prize Winner of the Third National Traffic Contest held in 1934 by the National Safety Council.

Milwaukee, as a matter of fact, is the logical successor, if there had to be one, to the city of Evanston, Ill., Grand Prize Winner in 1933, for in that year the Wisconsin metropolis was first among cities of the first population class. Thus Milwaukee has taken a double header, for, having made the best record of all the contest cities, she is naturally first also in her population group, with a motor-vehicle death rate per 100,000 of 10.8, compared with 14 in New York, 27.5 in Chicago, and 19.1 for the country.

The judges were Thomas H. MacDonold, Chief, U. S. Bureau of Public Roads; John E. Long, President, National Safety Council; and Harold S. Buttenheim, Editor of THE AMERICAN CITY. Their choices for first, second and third places in six population groups above 10,000, are given below, together with the winners in the year before.

1934	1933
I	
Milwaukee	Milwaukee
Pittsburgh	Pittsburgh
San Francisco	Boston
II	
Providence	Providence
Birmingham	Rochester, N. Y.
Dallas	Oakland, Calif.
III	
Fort Wayne	Grand Rapids
Paterson, N. J.	New Bedford
Syracuse	Springfield, Mass.
IV	
Schnectady	Evanston, Ill.
Holyoke, Mass.	Montgomery
Montgomery, Ala.	Lakewood, Ohio
V	
Dubuque, Ia.	Fond du Lac, Wis.
Maplewood, N. J.	Dubuque
Tucson, Ariz.	Chelsea, Mass.
VI	
Massena, N. Y.	La Grange, Ill.
Fort Collins, Colo.	Pampa, Texas
Xenia, Ohio	Massena

Honorable mention for the six groups in the awards just made goes to New York and Detroit; Memphis, Minneapolis, Newark; San Diego, New Haven, Elizabeth, Duluth; Phoenix, Altoona, Evanston, Ill.; Brockton (Mass.), Bayonne, Davenport, Allentown, Brookline; Poughkeepsie, University City (Mo.), Newark (Ohio), Rome (N. Y.), Central Falls (R. I.), West Orange (N. J.), Clarksburg (W. Va.), Kearney (N. J.); Faribault (Minn.), Palo Alto, Middletown (N. Y.), Menominee (Mich.), Iron Mountain (Mich.), Roselle (N. J.), South Milwaukee, Batavia (N. Y.), Adrian (Mich.), Mt. Clemens (Mich.).

Winners of first prizes received plaques, and, in addition to the above honorable mentions, certificates were awarded to 74 cities of 5,000-10,000 population *that went through the year without a traffic fatality.*

CITED FOR HAVING NO TRAFFIC DEATHS IN 1934

Alabama
Jasper
Talladega

Arizona
Bisbee
Globe
Miami
Prescott

Arizona
Van Buren

California
Calexico
Coronado
Piedmont

Colorado
Durango
Longmont

Illinois
Carbondale
Downers Grove
Glen Ellyn
Marion
Metropolis
Taylorville
Zion

Indiana
Bluffton
Mt. Vernon
Wabash

Iowa
Cherokee
Charles City

Kansas
Liberal

Maryland
Frostburg

Massachusetts
Marblehead
Somerset
Spencer
Ware

Michigan
Marshall
Sturgis

Minnesota
Fairmont

Missouri
Chillicothe
Maryville

Montana
Lewistown

Nebraska
Columbus
Fairbury

New Hampshire
Franklin

New Jersey
Metuchen
Pitman

New York
Elmira Heights
Saranac Lake

North Carolina
Mount Airy

North Dakota
Devils Lake
Valley City

Ohio
New Boston
Wilmington

Oklahoma
Durant
Stillwater

Oregon
Corvallis

Pennsylvania
Avalon
Huntingdon
Lansdowne
Nazareth
Oakmont
Summit Hill
West View Boro
Wilmerding

South Dakota
Yankton

Tennessee
Shelbyville

Texas
Mineral Wells
New Braunfels
Uvalde

Virginia
Waynesboro

Vermont
St. Albans

Washington
Centralia
Puyallup

Wisconsin
Ft. Atkinson
Merrill
Portage City
Rhinelander
Rice Lake
Wisconsin Rapids

The grading schedule for the whole event was the same as reported here one year ago, with the omission of 10 points for community safety organization: accident record, 50 points; accident reporting, 5; traffic-law enforcement, 15; child safety, 10; public education, 10 points; traffic engineering, 10 points.

All cities entered in the contest were required to make regular reports on their fatal and non-fatal accidents throughout the year. At the end of the year, each city was asked to submit a final report of its work along each of the lines mentioned in the grading. Small cities were not judged by metropolitan standards. These reports were weighed and sifted during January and February by statisticians, engineers and educational experts on the staff of the National Safety Council. The prizes were awarded to those cities which, in the judgment of the judges, based on this evaluation, had come the nearest to doing for safety those things which were practical in such communities.

In an unusual program, bronze plaques were presented to the winning cities on March 28. Official city representatives met in their respective cities, and a nation-wide radio hook-up at 1:30 Eastern Standard Time was arranged for presentation ceremonies. The list of speakers included Daniel C. Roper, Secretary of Commerce, and Harold G. Hoffman, Governor of New Jersey.

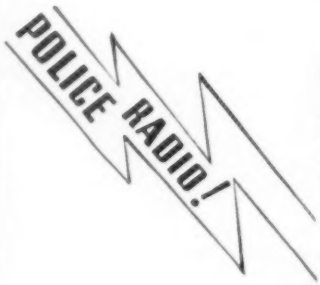
The purpose of the National Traffic Safety Contest is to bring recognition to American municipalities for constructive achievement in overcoming their traffic accident problems. Results of the first three contests have proved definitely that the spur of competition actually means a saving of lives, says the Council. The average death rates of cities competing in the contest have been well below that of the nation as a whole.

Motorcycles in Pairs

THE city of Saint Paul last July purchased six Indian twin-cylinder motorcycles, radio-equipped and painted white with black trimming. They are used to control traffic and catch speeders; but occasionally they answer a call when the squad cars are in service. Writes M. J. Culligan, Chief of Police: "We found after using them a short while that used in pairs they were much more efficient than when used single. In the late shifts they have done some good work in arresting careless drivers and speeders, always working in pairs. We find that keeping them conspicuous along our arterials works to our advantage in keeping down the number of accidents and speeders."

FASTER THAN THE CROOKS

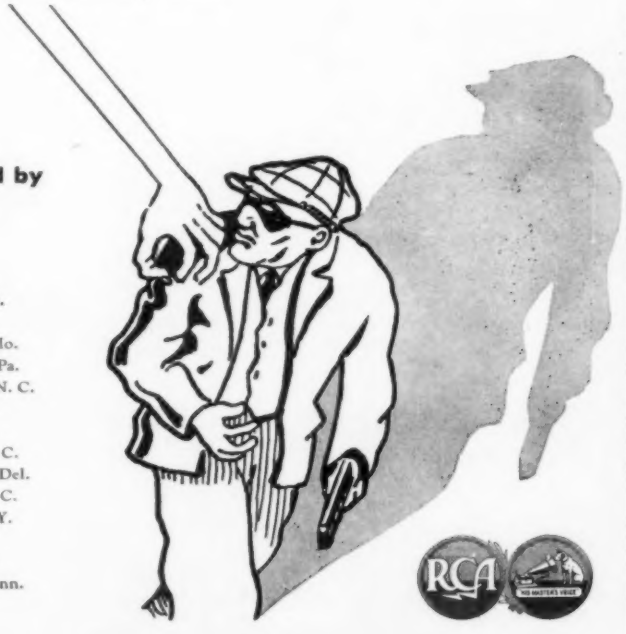
RCA Victor's Terra-Wave Police Radio System *helps you fight crime the speedy, modern way*



Criminals get ambitious when they know that police protection is behind the times. That's why more and more towns and cities are fighting crime with RCA Victor's simple police radio system . . . the "Terra-Wave". It's as fast and modern as only radio can be—and that's faster than the nimblest criminal. Don't place your police department under a handicap. Write to "Radio Headquarters" for a full description of the RCA Victor Terra-Wave Police Radio System.

Partial List of Towns and Cities Protected by RCA VICTOR TERRA-WAVE POLICE RADIO SYSTEM:

Brookline, Pa.	Durham, N. C.	LaGrange, Ga.
Port Jervis, N. Y.	Danville, Va.	Lima, Ohio
Abington, Pa.	Hickory, N. C.	Springfield, Mo.
Englewood, N. J.	Suffolk, Va.	McKeesport, Pa.
Winnetka, Ill.	Salisbury, N. C.	Greensboro, N. C.
Miami Beach, Fla.	Sharon Hill, Pa.	Norfolk, Va.
St. Petersburg, Fla.	Chattanooga, Tenn.	Clairton, Pa.
Fort Worth, Texas	Chicago, Ill.	Greenville, S. C.
Ashland, Ky.	Huntington, W. Va.	Wilmington, Del.
Ardmore, Pa.	Cheltenham, Pa.	Columbia, S. C.
Amarillo, Texas	High Point, N. C.	Scarsdale, N. Y.
Winston-Salem, N.C.	Stockton, Cal.	Rome, Ga.
Paducah, Ky.	Roselle, N. J.	Danville, Ill.
Lansdowne, Pa.	Camden, N. J.	Kingsport, Tenn.



RCA MANUFACTURING COMPANY, INC.

CAMDEN, NEW JERSEY

(A Radio Corporation of America Subsidiary)

SALES AND SERVICE REPRESENTATIVES IN PRINCIPAL CITIES

Mention THE AMERICAN CITY—it helps.

A Municipal Car-Life Extension Institute to Save the Car Owner Expense and Trouble

THE Memphis plan of compulsory motor-vehicle inspection has created an extraordinary amount of interest, because it seems to be successful, which means accepted by the citizens of Memphis. Des Moines has now tried it, Evanston, Ill., and Montreal are following suit, and many other cities are reported to be considering the establishment of a similar plan.

The idea of compulsory periodic testing of all motor vehicles toward keeping the cars of a community in tip-top repair is not new. The American Automobile Association at its annual conventions in 1933 and 1934 indorsed the idea, but insisted that to be effective the inspection must take place under state supervision in garages operated by the state.

This was before Memphis had set the fashion for inspection under municipal supervision at a bureau of the municipality.

The reason for the A.A.A. demand for publicly owned inspection stations is the obvious one of giving the motoring public a square deal. Probably the chief reason for the failure thus far in putting over a nation-wide plan of inspection, whether state or municipal, is the well-founded suspicion that the chief result of such a plan, if not indeed its primary object, was to open up a profitable new market for repair garages. The successful element in the Memphis plan is that while the city tests and prescribes, the car owner selects his repair shop. It is difficult to see how there can be collusion under this plan.

Annoyance? Or Benefit

The kernel of the whole question is: Is compulsory inspection every three months or twelve months needed and justified by the facts, or it is just one more annoyance for car owners? There seems to be a general agreement that commercial vehicles should be inspected. These vehicles are bent on business, driven by employees whose efficiency is measured by their speed in delivering. It is easy to see how the owner of one truck is likely to neglect small repairs and adjustments, let alone general overhauling, unless compelled to keep his truck in condition.

There is no doubt that if defective equipment were a major accident cause, compulsory inspection and repair would be in effect right now. But the fact is that a small percentage of all accidents are traceable to mechanical imperfections in automobiles. An authority in the field says: "The wildest inspection enthusiasts today do not attribute more than 10 per cent responsibility for accidents to mechanical imperfections of motor cars, whereas a few years ago they guessed that responsibility to amount to 60 or 70 per cent."

Consequently, as G. E. Weaver, manufacturer of automotive service equipment, recently pointed out: "We must recognize that compulsory inspection alone is not a panacea to be blindly adopted by cities and states, but must be used in connection with modern engineering, education and enforcement. An Inspection Bureau is a focal point in a community where motor-vehicle inspection and traffic education may be had."

THE TAG ON THE CAR

A Logically Justified Plan

It is difficult to see how any one can do otherwise than subscribe to this proposal. In fact, a plan that contemplates the pocket or checkbook and the convenience of the car owner as well as his safety and that of his passengers and his hosts of colleagues of the road, has a logical justification that will be recognized.

This Card Must Be Returned for Final Inspection

CORRECTIONS MADE

We certify that the following adjustments have been properly made and that in our opinion this car is entitled to pass your inspection:

Check Adjustments Made

Head-lights	☐	Rear View Mirror	☐
Tail Light	☐	Steering	☐
Horn	☐	Wheel Alignment	☐
Windshield	☐	Brakes	☐
Windshield Wiper	☐	Muffler	☐

REPAIRED

BY _____ DATE _____

OWNER PRESENTS THIS CARD FOR THE FINAL OK AT MEMPHIS

How can the interest of the motorist be awakened? He should be interested in keeping his car in good condition at minimum cost. His city says to him: "We are establishing by ordinance a motor-vehicle bureau for your benefit, where you must bring your car twice a year to find out what needs to be done in order to put it in first-class condition. If nothing needs to be done, we will tell you so. We will also tell you if it needs spraying, greasing, battery water, or adjustment of brakes, lights or steering gear. Whatever needs to be done, you can either do it yourself or have it done by any service station you please. Come back within the week and we will tell you if your car is O. K. It will cost you 50 cents. This is the purpose of our new ordinance making mandatory the inspection of all vehicles registered in your city."

Thus addressed, the car owner, who is also a voter and taxpayer, is likely to approve of the plan.

This matter of owner-education is stressed by the Bendix Products Corporation, close students of compulsory inspection. The owner's convenience should be suited by swift and thorough inspection; but the opportunity to talk with him and show him "how" should not be sacrificed to the saving of two minutes. In fact, it is likely that this short informative chat with the inspector will do much to convince the owner that inspection is worth while.

A model ordinance has been prepared by Bendix Products Corp., South Bend, Ind., covering the establishment and procedure of a public inspection bureau. In it the Director of Safety is given directions and also the power to make rules and regulations he deems necessary and consistent with the ordinance and the state motor-vehicle laws. It calls for two inspections, with provisions for a maximum of four. Used vehicles must be approved before they can be sold. Locations and testing equipment are approved by Council. The safety factors are brakes, lights, horn, wiper, rear-vision mirror, steering, and wheel alignment. The Director of Safety determines standards. Five days are allowed for the correction of defects. Solicitation of repair work is illegal on the premises.

The Memphis, Tenn., ordinance (Chapter 12, Official Traffic Code) calls for three inspections, with fees 30, 35 and 35 cents. Three days are allowed for corrections, and if they have not been made satisfactorily the car may not be operated until they are made. Fines are $1 to $50.

This city reports that it won public approval in the enforcement of this ordinance on the basis of a self-contained and self-sustained (though non-profit-making) unit to give service to the automobilists, so that traffic conditions would be improved.

It can be done IN YOUR CITY

—— Just as it has in hundreds of similar cases!

★ THIS SLIPPING HILLSIDE in San Francisco, Calif., had caused thousands of dollars damage to homes and utility lines. Armco Perforated Pipe stopped the slide completely.

★ TYPICAL SUBDRAINAGE SYSTEM on a baseball field at Asheville, N. C. This Armco Perforated Pipe has functioned perfectly for nearly 8 years.

★ RENTSCHLER FIELD at Hartford, Conn., continues to be one of the best drained airports in this country. Armco Perforated (& Paved Invert) Pipe was installed here several years ago.

THESE are just a few of the many city installations of Armco Perforated Pipe, which prove that subdrainage systems can be built to serve efficiently, year after year, without attention. This strong, durable pipe is easy to install in long lengths. It does not clog up, break or disjoint. And usually, it pays for itself within a few years' time—by reducing maintenance.

Ask an Armco engineer about it, or mail the coupon for more detailed information showing how "wet areas" can be kept dry and firm—the year 'round.

ARMCO CULVERT MFRS. ASSOCIATION
★ Middletown, Ohio ★

ARMCO

ARMCO PERFORATED PIPE

removes damaging ground water

☐ Send me free information on Armco Perforated Pipe for _____

Name _____

Title or Occupation _____

Street _____

City _____

AC-4-35

When you write for the catalog, kindly mention THE AMERICAN CITY

Current Thoughts on Traffic

THE serious thinking that is being done in the field of traffic control is reflected in a rapidly growing literature of the art. A few of the thoughts currently directed toward the solution of various phases of the traffic problem are cited below.

Arnold H. Vey, Traffic Engineer of the state of New Jersey, in presenting the answer of the traffic-engineering profession to the question propounded by the Greater New York Safety Conference, "How can the group which I represent contribute most to the reduction of street accidents?" gives the following conception of the functions and activities of the traffic engineer.

Gathering and compiling reports of motor-vehicle accidents and the preparation of the statistical reports and analyses of such reports.

Traffic surveys and studies to obtain factual data concerning the volume, type, frequency and direction of movement of vehicular traffic at various intersections, roadways or portions of roadways. These traffic surveys may include not only general surveys but also special ones, such as parking, observance of regulatory devices, pedestrian traffic, vehicular speeds.

Street planning, including not only width and arrangement of streets but also the necessity for physical control methods, such as grade separations and islands.

The design, use and application of regulatory devices, including all methods of applied control of traffic, such as signs, signals and markings.

The promulgation and adoption of traffic laws and regulations and the necessity for changes from time to time, to meet changing traffic conditions.

Educational activities to encourage not only law observance but public support and cooperation; promulgating methods of presenting safety educational material; cooperating with enforcement agencies and court officials in endeavors to make roadways safe.

Sidney J. Williams, Director, Public Safety Division, National Safety Council, in a paper presented at the University of Michigan on February 13, entitled "Traffic Surveys Under the FERA," emphasized the value of traffic surveys and the danger of a slovenly survey. "Many a mayor, alderman, or even police chief seems to have the naive idea that the placing of a number of unemployed people on the corners to count the passing vehicles will in some mysterious fashion solve the traffic problem. "The 'problem cities,'" he pointed out, "are those having no adequate traffic set-up—no traffic engineer, a horse and buggy police department, signs and signals placed according to the guesses of the cracker-barrel politicians. Such a town certainly needs a traffic survey, but still more does it need someone to tell them what to survey and what to do with the results. A year ago we had in the Federal Works Administration a traffic engineering department of about a dozen men, including Burton Marsh, Earl Reeder and Maxwell Halsey, as Volunteer Associate Directors, and six field engineers working under them, available to visit any city and advise on the layout of a survey and later—had they survived—on the interpretation of results. The pity was that before most cities could get started, the CWA was through."

Sergeant Ray Sullivan, Michigan State Police, Jackson, Mich., in what he calls a "quick-sketch chalk talk" before the Conference on Highway Safety, at Ann Arbor, stressed the importance of favorable contact of police officers with citizens. Get the lesson over, he urges; don't be gruff and uncommunicative turning the incident into an altercation. Show the citizen the reason for every law he violates.

Burton W. Marsh, Director, Safety and Traffic Engineering Department, American Automobile Association, presented before this same conference a considered and valuable study, "Looking Ahead at the Traffic Problem." "Control," he points out, "will soon pass to persons brought up under severe traffic conditions. Many persons in control of affairs today grew up when traffic problems were not severe. They cannot be expected to be as progressive as will be the coming generation. He suggests greater vision and boldness in designing highways for the future, and names the "express freeway" as the type:

1. A wide right-of-way to which abutting owners do not have the right of ingress and egress except at selected points a considerable distance apart.

2. Grade separation at all major intersections and use of the "roundabout" principle to prevent straight crossings at high speed at less important intersections.

3. Divided roadway with a central separator strip, preferably at least 30 inches wide. Two lanes in each direction are necessary to provide for overtaking and passing.

4. Highway sidewalks where warranted by pedestrian traffic.

5. Highway illumination to reduce the serious toll of night accidents.

6. A limited number of limited service facilities, such as garages, rest rooms, filling stations, will be located and access to them designed in such a manner as not to interfere with the efficiency of the freeway.

The growing problem of speed will be controlled by education and training of drivers, reasonable speed laws, and reasonable guiding speeds at points of special hazard. Accidents can be reduced.

"Should Pedestrian Traffic Be Regulated?" is the title of a paper by M. O. Eldridge, Assistant Director of Traffic, Washington, D. C., presented on January 23 before the American Road Builders' Association; and the first sentence answers that it should. Here are his remarks about Youth and Age crossing a street:

The child pedestrian presents the major problem. He must be closely supervised on his way to and from school. He must be kept out of the streets. Enclosed, safe playgrounds must be built for him, providing a sanctuary away from the streets for his normal games and activities. Parents must be educated as to the dangers confronting the child in his outdoor activities and to keep closer surveillance over him and to agitate for more and better playgrounds. The child must himself be educated in the home and in the public school to the dangers of the highway.

The next group which attracts our attention is the pedestrian over 65 years of age. . . . While the child is unconscious and heedless of his dangers, the elderly person is often careless and introspective, no longer keenly aware of his surroundings. . . . He crosses the street wherever and whenever he pleases. Would he cross the street at intersections if he were prohibited by law from crossing between intersections? That is the question.

Heinrich A. Pickert, Commissioner of Police of Detroit, discussed "Speed and Safety from the City Police Standpoint," at the Ann Arbor conference. What is safe speed in city limits? The deciding factors are density of population and traffic, cross traffic, rights of pedestrians, widths of highways. Michigan law sets speeds of 15 miles in business districts and 20 miles in residential areas.

Recently the state of Ohio passed a law which allows a rate of speed of 35 miles per hour in the residence districts of all cities. In studying the statistics as given out by the National Safety Council, and comparing some of the large cities of the state of Ohio with those of the city of Detroit, I find the following: that whereas Detroit has a death rate per 100,000 of 18.4, Cleveland has a death rate of 25.5; Columbus 25.1; Akron 25.5; Cincinnati 25.2; Dayton 28.5. This would perhaps indicate that 35 miles per hour in residence districts might be too high for conditions.

Company Maintains Private Traffic Court

A PRIVATE traffic court for drivers of its 1,200 trucks proved to be an effective contribution by the Golden State Company, Ltd., to safe-driving campaigns in California cities during 1934.

The company holds a traffic court, a four-man board of review. Every driver involved in an accident must face this board, which conducts its investigation along the same lines as a court of law, with this exception: guilt or innocence in the eye of the law does not influence the company court. A driver who may be absolved of blame through a strict legal interpretation, may well be found guilty of negligence by his company, and vice versa.

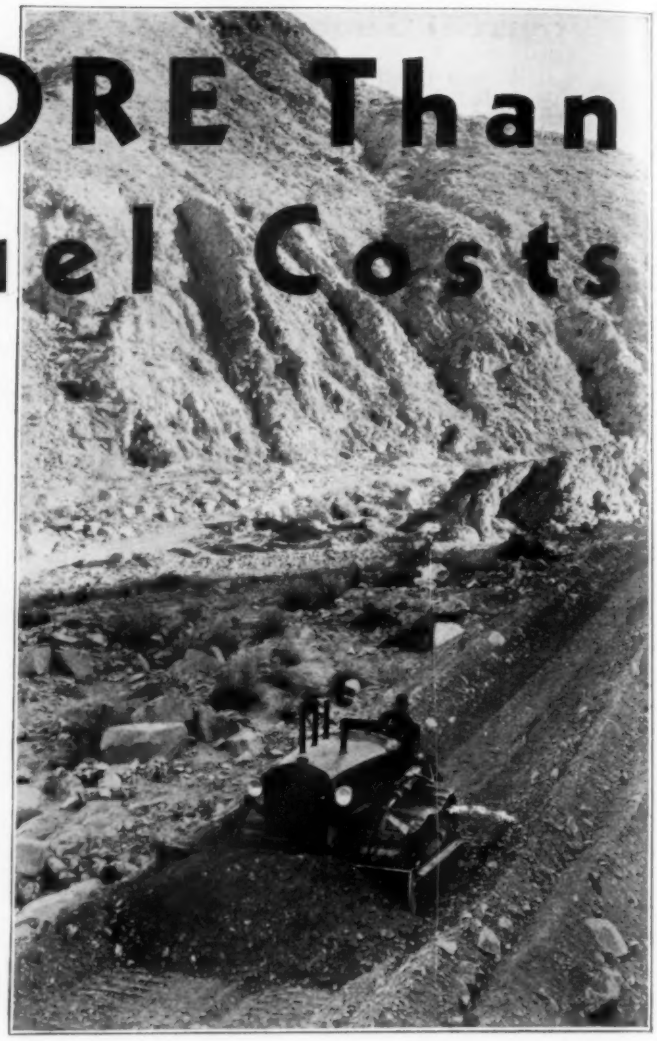
Any driver found guilty in nine minor accidents (those causing less than $50 damages) loses his driving privileges. Three major accidents (resulting in personal injuries or damages exceeding $50) bring the same penalty. To earn a certificate, the driver must have an absolutely clean slate for the year. This means *no* accidents. Regardless of where the blame might finally be fixed, an accident of any kind means no certificate for the driver that year.

Autos for Crime, Cycles for Speedy Calls

ALLENTOWN, PA., two men in a Chevrolet equal six men afoot in the outlying sections of the city. The pair are in better physical condition and readier for the surprises attendant on sleuthing. F. D. Beary, Commissioner Department of Public Works, advises that he plans to add at least two new cruiser cars during the year, for patrolling the business district at night. The purpose is to reduce the number of petty thefts being perpetrated by boys and young men.

For messenger service and for speedy police calls, two Harley-Davidson motorcycles with side-cars are used, and one solo for patrolling the streets to cover traffic.

Get MORE Than Low Fuel Costs



These are the ***facts*** that determine Economical Tractor Operation . . . .

- **LOW FUEL COST**
- **LOWER ORIGINAL COST**
- **LOWER MAINTENANCE**
- **LESS DEPRECIATION**

These are the four big factors in cutting tractor costs. To get one at the expense of the others is no economy. Don't be misled . . . before you buy any tractor, find out about layups for repairs . . . and condition of the tractor when the job is finished. A-C Oil Tractors operate with less maintenance cost because internal pressures are less than one-third those of the compression type. A-C Oil Tractors are ready to compete on fuel costs and all other costs. Buy the tractor that gives you LOWEST FINAL COST.

A-C OIL TRACTORS GIVE LOWEST FINAL COST!

Model "L-O". .76 Drawbar H.P. Model "K-O". .48 Drawbar H.P.

TRACK-TYPE AND WHEEL-TYPE TRACTORS...POWER CONTROLLED GRADERS...HAND CONTROLLED GRADERS...SPEED PATROL GRADERS ...ELEVATING GRADERS...POWER UNITS...TRACK WAGONS...WAGON TRACKS

ALLIS-CHALMERS
TRACTOR DIVISION—MILWAUKEE, U. S. A.

Water Rates and Service Charges, Installation Charges, Hydrant Rentals and Sprinkler Costs—XII

Abstracts of Water Departments and Company Reports

Nutley, N. J.

Population	25,000
" served	25,000
Number of services	5,500
" " meters	5,500
" " hydrants	525
Miles of water main	60.0

The domestic consumer charges for water used during any quarter are as follows:

First	1,200 cu. ft.	$3.00 per 1,000 cu. ft.
Next	8,800 " "	1.80 " " " "
All over	10,000 " "	1.25 " " " "

Industrial consumer charges are a flat rate of $1.25 per 1,000 cu. ft.

All water services are installed by licensed plumbers, and they pay a fee of $2.00 to cover inspection of each individual service.

There is no charge either for public fire hydrants or for private fire hydrants or sprinkler installations.

JOSEPH VAN TREEK,
Superintendent of Water.

Bucyrus, Ohio

Population	10,000
" served	Unknown
Number of services	2,750
" " meters	2,668
" " hydrants	237
Miles of water main	28.66

The rates for metered service in Bucyrus are as follows:

First	3,000 cu. ft. per mo.	33c per 100 cu. ft.
Next	10,000 " " " "	27c " " " "
"	10,000 " " " "	16c " " " "
All over	23,000 " " " "	6c " " " "

The minimum monthly bills are based on the size of the meter as follows:

⅝" meter	$1.00 per mo.
¾" "	2.25 " "
1" "	3.50 " "
1¼" "	5.00 " "
1½" "	6.50 " "
2" "	10.00 " "
3" "	20.00 " "
4" "	40.00 " "
6" "	60.00 " "

Applications for service may be filled by the prospective consumer or a licensed plumber representing the consumer. The City Water Department furnishes to the licensed plumber the corporation cock, curb or stop cock, and curb box at actual cost plus 15%, and upon the property owner's making the proper excavation around the main the city taps the main and inserts the corporation cock free of cost so far as labor and rental of the tapping machine are concerned, but obtaining the permit, cutting and restoring the pavement are done at the expense of the property owner. The service pipe from the water main to the consumer's premises must be furnished and maintained at the expense of the property owner. Also, a service box must be provided over the curb cock and maintained at the property owner's risk and expense.

Industrial meters are read and billed monthly, and domestic meters quarterly.

The city pays $20,000 per year to the Water Department for hydrant rental and fire service at the hydrant. The charge for private fire protection is regulated by the size of the opening in the water main and the diameter of the service line between the main and the curb. No service less than 2" in diameter is permitted for a private fire service.

ROY RILEY,
Superintendent, Bucyrus Water Works.

Ogdensburg, N. Y.

Population	17,000
" served	19,000
Number of services	4,000
" " meters	300
" " hydrants	295
Miles of water main	36.0

A number of the commercial users are metered, and the rates for small meters are as follows: The rate per month for a ⅝" meter which can be attached to a ¾" pipe is 75c, which allows consumers up to and including 7,500 gals.; the rates for a ¾" meter is $1.00 per month, and this allows consumers up to and including 10,000 gals.; the rate for a 1" meter is $1.25, and this allows consumers up to and including 12,500 gals. per month. The rates for metered water are as follows:

First	500,000 gals. per month	10c per 1,000 gals.
Next	500,000 " " "	9c " " "
All over	1,000,000 " " "	8c " " "

Applicants for original service pipes to their premises, of an inside diameter not exceeding ¾", are not charged for any expense incurred for fixtures, labor or materials necessary from the main to the shut-off at the curb. All expense from the curb shut-off into the property and through the cellar wall is borne by the applicant, and payment is made before the water is turned on. Applicants desiring a larger service pipe than ¾" must pay the increased cost of the larger pipe and fixtures, in addition to the entire expense incurred from the curb shut-off in. All persons making an application for a renewal of service pipes must pay for them in advance, provided, however, that no charge is made for tapping, or for the service cock, lead connection, or curb stop or box; except in cases requiring a larger service than the one replaced, when the applicant must pay the increased cost of the larger fittings, in addition to the charges for trenching and pipe. All service pipes are laid at 5 ft. below the surface of the ground and must not be laid in the same trench with any sewer pipe or drain. No service pipe is permitted to conduct water into any two or more distinct premises or two or more tenements unless separate and distinct shut-offs are provided at the curb, so that any one of the premises may be shut off without interfering with the other.

There are no hydrant rentals nor sprinkler charges.

CHARLES H. LORD,
City Engineer.

Marquette, Mich.

Population	15,000
" served	12,000
Number of services	2,966
" " meters	1,900
" " hydrants	261
Miles of water main	32.38

The meter rates, which are payable quarterly on or before the 25th day of the month in which the bills are rendered, are as follows:

First	7,000 cu. ft. or less	10c per 100 cu. ft.
Second	7,000 " " or part thereof	8c " " " "
Third	7,000 " "	5c " " " "
All over	21,000 " "	3c " " " "

In addition to the above there is a charge for the service and use of the meter per quarter as follows:

⅝" meter	$1.35	2" meter	$6.00
¾" "	1.80	3" "	12.00
1" "	3.00	4" "	24.00
1¼" "	3.75	6" "	36.00
1½" "	4.50	8" "	60.00

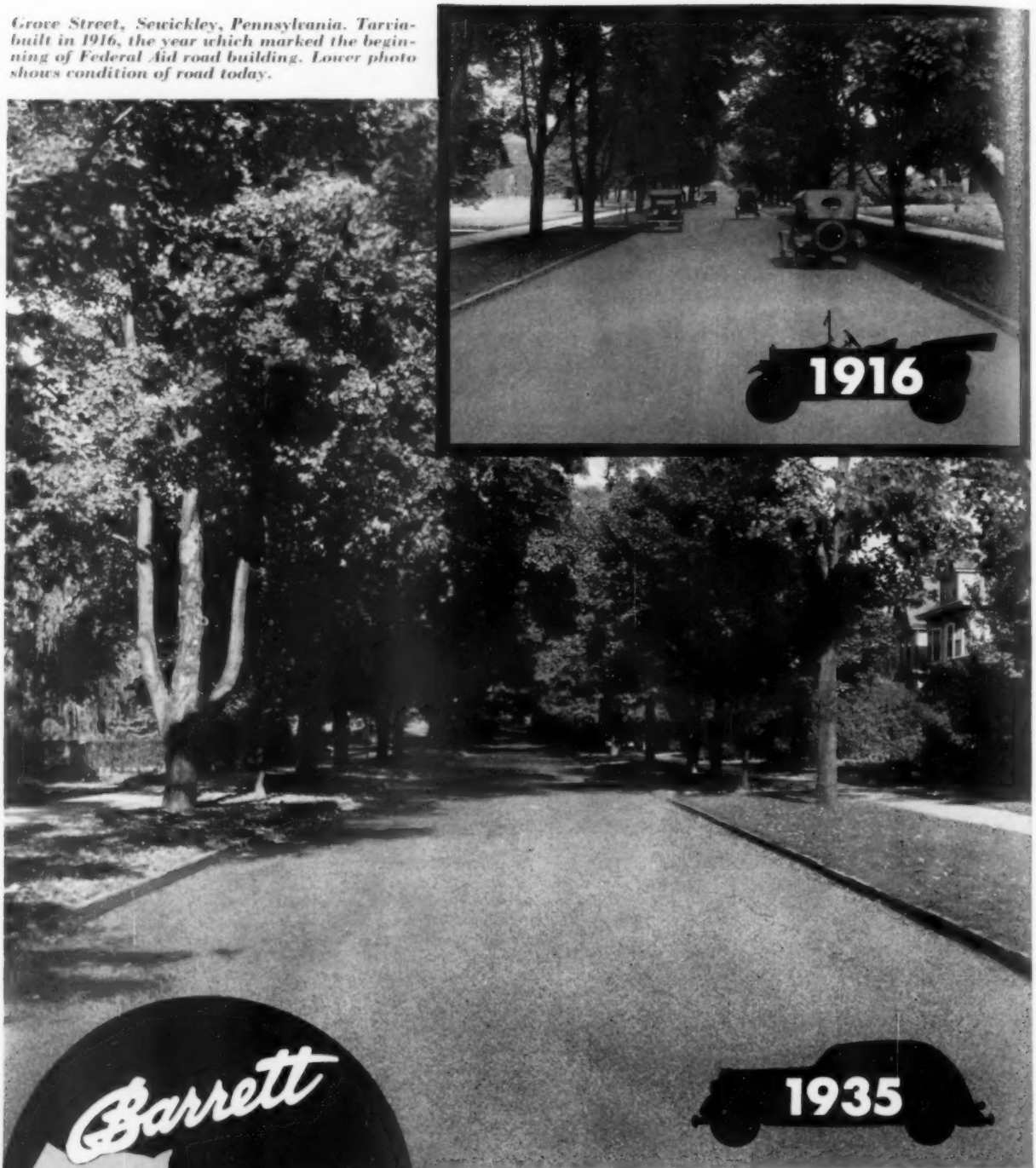
The charges for the installation of services are:

1" tap from main to sidewalk	$12.00
¾" "	15.00
1" "	18.00
Larger taps at cost	

A charge of $25.00 each per year is made to the city for public fire hydrants. There is no charge for private sprinkler services for fire protection.

WILLIAM J. JOHNSTON,
Superintendent, Department of Water.

Grove Street, Sewickley, Pennsylvania. Tarvia-built in 1916, the year which marked the beginning of Federal Aid road building. Lower photo shows condition of road today.



Barrett Tarvia
GOOD ROADS AT LOW COST

Tarvia is made by America's oldest and most experienced manufacturer of coal-tar road-building materials. It is refined to rigid specifications which meet every road-building or road-maintaining need and fit every traffic requirement. Grove Street's nineteen years of flawless service—and this is not an exceptional Tarvia performance record—tells you how durable Tarvia roads are, and why Tarvia belongs in your road program. Phone, wire or write for details.

THE BARRETT COMPANY New York Chicago Birmingham Philadelphia St. Louis Minneapolis Hartford Detroit Cleveland Boston Buffalo Columbus Milwaukee Providence Syracuse Lebanon Toledo Cincinnati Baltimore Youngstown Bethlehem Rochester Portland, Me. *In Canada:* THE BARRETT COMPANY, LTD., Montreal, Toronto, Winnipeg, Vancouver

During April we hope you will remember to mention THE AMERICAN CITY

Ellwood, Pa.

Population	12,323
" served	14,482
Number of services	3,355 active
" " meters	3,476
" " hydrants	118
Miles of water main	42.71

The output charge for water delivered, which is in addition to the service charge, is as follows:

First 25,000 gals. or less per quarter per consumer	50c per 1,000 gals.
Next 250,000 "	30c " " "
Over 275,000 "	4c " " "

It is provided, however, that all water in excess of 12,000,000 gals. per month taken by one consumer will be supplied at the rate of 3c per 1,000 gals. A discount of 5% is allowed on the service charge and charges for water delivered under the first and second step rates if the bill is paid within 10 days.

SERVICE CHARGES

½" or ⅝" meter	$ 6.00 each per year
¾" "	12.00 " " "
1" "	24.00 " " "
1½" "	48.00 " " "
2" "	100.00 " " "
3" "	200.00 " " "
4" "	400.00 " " "
6" "	600.00 " " "
8" "	800.00 " " "
10" "	1,000.00 " " "
12" "	1,200.00 " " "

A proportional amount of the above charges is made for each quarter or each month according to the period covered by the bill rendered.

Those desiring water must apply in writing for service. The Water Company taps the main, inserts the corporation cock, carries the service pipe to the curb, and installs the curb cock and service box, all of which remain the property of the company. Each consumer must supply independent pipes from the main, and where two or more buildings are owned by the same party and are located on the same lot or adjoining lots and are to be supplied with water by the company, a separate service pipe must be provided for each building. The company furnishes the meter suitable for each service, but the consumer must provide suitable housing facilities for the meter and protect it from any damage through extreme heat or cold.

Domestic meters are read and bills rendered quarterly, commercial and industrial meters monthly. Domestic consumers are divided into three zones. Cycle billing is used, and one zone is read and billed each month.

The charge for public fire protection is payable quarterly, the rate being $500.00 per mile for each mile of street main owned by the company 4 inches and larger. There is a charge of $10.00 each per year for fire hydrants.

Private fire service through the medium of automatic sprinklers is charged at the rates below, according to the size of service:

4" service connection	$260 each per year
6" " "	390 " " "
8" " "	520 " " "
10" " "	650 " " "
12" " "	780 " " "

The consumer is entitled to the number of sprinkler heads indicated by the charge for the size pipe employed divided by 5c, and all over this number are charged for at the rate of 5c per head per year. Fire hydrants or hose connections are charged for at the rate of $20.00 per year per hose opening.

P. R. LUTTON,
Manager, Ellwood Consolidated Water Company.

Cuyahoga Falls, Ohio

Population	20,000
" served	18,000
Number of services	5,000
" " meters	5,000
" " hydrants	634
Miles of water main	100.0

The rates for water sold by meter are as follows:

First 20,000 cu. ft.	$1.60 per 1,000 cu. ft.
Next 20,000 " "	1.50 " " " "
" 20,000 " "	1.40 " " " "
" 20,000 " "	1.30 " " " "
" 20,000 " "	1.20 " " " "
Over 100,000 " "	.80 " " " "

The minimum meter rates which are charged vary according to the size of meter as follows:

⅝" meter, minimum	$1.00 per month
¾" " "	1.50 " "
1" " "	3.00 " "
1½" " "	4.00 " "
2" " "	5.00 " "
3" " "	7.00 " "
4" " "	10.00 " "
6" " "	15.00 " "

⅝" meter, cu. ft.	1,875 per quarter
¾" " " "	2,713 " "
1" " " "	5,625 " "
1½" " " "	7,500 " "
2" " " "	9,375 " "
3" " " "	13,125 " "
4" " " "	18,750 " "
6" " " "	28,666 " "

The charges for fire services when the meter is owned by the consumer are:

2"	$2.00 per quarter
3"	3.00 " "
4"	4.00 " "
6"	6.00 " "
8"	10.00 " "

The charges for fire service where the service is unmetered are as follows:

2"	$8.00
3"	12.00
4"	16.00
6"	24.00
8"	40.00

As the plant is municipally owned, no charge is made for municipal fire hydrants.

E. W. MONTGOMERY,
Superintendent, Water Department.

West Springfield, Mass.

Population	16,686
" served	16,000
Number of services	3,336
" " meters	3,277
" " hydrants	446
Miles of water main	63.34

A reduction in water rates was made January 1, 1930, to the following schedule:

First 5,000 cu. ft.	21c per 100 cu. ft.
Next 10,000 " "	16c " " " "
All over 15,000 " "	8½c " " " "

All applications for service connections and the use of town water are made at the office of the Water Registrar on a special form signed by the property owner or his agent. The expense of installing a service pipe from the street main to the stop and waste cock, meter or valve inside the consumers' premises, including the required tap, pipe and other appurtenances, is paid for by the applicant. The Water Registrar requires an advance deposit of the estimated cost of installing the service.

Public fire hydrants are installed and maintained by, and at the expense of, the Water Department for the sole purpose of fire protection, no rental charge being made to the city. Private sprinkler systems are on separate services which are installed at the owner's expense, and they must be metered. There is a service charge according to the size of meter, and water used is charged at the regular meter rate.

The service charge on meters up to 1" inclusive is 50c per quarter in addition to the registered estimated or minimum charge or rate. Special charges on meters larger than 1" are also made.

HARRY R. BABB,
Water Registrar.

Duluth, Minn.

Population	101,417
" served	101,417
Number of services	22,930
" " meters	18,385
" " hydrants	1,343
Miles of water main	239.48

The monthly metered water rates for general purposes are:

First 10,000 cu. ft.	15c per 100 cu. ft.
Next 10,000 " "	12c " " " "
All over 20,000 " "	8c " " " "

The minimum bill is 50c per month for a service with a ⅝" meter.

For water used for elevators, motors, swimming pools and for cooling and refrigerating machinery, the service is separately metered and charged at the following rates:

First 1,000 " "	15c per 100 cu. ft.
Next 1,000 " "	12c " " " "
All over 2,000 " "	8c " " " "

Minimum bill 50c per month on a service with a ⅝" meter.

The charge for water for private skating rinks is 10c per 100 cu. ft. based on excess registration of the meter; public skating rinks, 8c per 100 cu. ft.; for lawn sprinkling, 6c per 100 cu. ft., when used between the hours of 6 P. M. and 5 A. M. during the months of June, July, August and September. Where leakages and bleeders are installed on services, one-half the regular rate is charged.

Bills may be paid at the Water and Light Department office or at any one of eleven other places distributed throughout the city and designated as official payment stations.

The charge for public fire hydrants is $50.00 per hydrant per year, but the city has not paid this account for the past two years.

FELIX SELIGMAN,
Manager, Water and Light Department.

The 237 Reports Published Last Year Have Been Reprinted. Price $1.

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INDIANAPOLIS has learned what to expect from salvaging old pavements with a resurfacing of concrete. Mile after mile of streets rejuvenated in this way now have a modern, smooth-riding surface, easy to clean and requiring practically no maintenance. In the four years since 1931 more than 150,000 square yards of concrete resurfacing have been laid, have stood the test of traffic with more vehicles than before, and have enabled Indianapolis to modernize its streets at low cost.

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Address.....

City.....*State*.....

Why not remember to mention THE AMERICAN CITY?

Corning, N. Y.

Population	16,000
" served	16,000
Number of services	3,789
" " meters	3,820
" " hydrants	352
Miles of water main	42.94

The general meter rates for all purposes in Corning are:

First	10,000 gals. per quarter.	36c per 1,000 gals.	
Second	10,000 " " "	28c " " "	
Third	10,000 " " "	27c " " "	
Fourth	10,000 " " "	25c " " "	
Fifth	10,000 " " "	24c " " "	
Second	50,000 " " "	22c " " "	
"	100,000 " " "	18c " " "	
Third	100,000 " " "	14c " " "	
Fourth	100,000 " " "	12c " " "	
Fifth	100,000 " " "	11c " " "	
Second	500,000 " " "	10c " " "	

The minimum charge for water per quarter is $1.86.

The special rates for large consumers are:

First	1,000,000 gals. per quarter	12c per 1,000 gals.	
Second	1,000,000 " " "	11c " " "	
Third	1,000,000 " " "	10c " " "	
Fourth	1,000,000 " " "	9c " " "	
Fifth	1,000,000 " " "	8c " " "	
Second	5,000,000 " " "	7c " " "	
Third	5,000,000 " " "	6c " " "	
Second	10,000,000 " " "	5c " " "	
Third	10,000,000 " " "	4c " " "	

WILLIAM O. DRAKE,
Superintendent of Public Works.

Middletown, Ohio

Population	30,000
" served	30,000
Number of services	6,800
" " meters	6,770
" " hydrants	523
Miles of water main	68.0

The first 1,000 cu. ft. of water used by a consumer carries a service charge of $1.25; the next 4,000 cu. ft. is charged at the rate of $1.00 per 1,000 cu. ft.; the next 5,000 cu. ft. is charged at 90c per 1,000 cu. ft. and all over 10,000 cu. ft. is billed at 60c per 1,000 cu. ft. This rate applies to all domestic, commercial and industrial services.

The hydrant rentals call for a book credit of $30.00 per hydrant per year in favor of the water works. All private hydrants are metered. Sprinkler charges for private fire protection come under meter rates, since they are all metered.

The installation of services is done by the water works and charges are made on the basis of cash deposits as follows:

¾" service, flat charge of	$12.00
1" " " " "	16.00

All larger services, special rates, depending upon location and other conditions.

EARL GEBHART,
Superintendent, Water Works.

Niles, Ohio

Population	16,000
" served	16,000
Number of services	3,500
" " meters	3,500
" " hydrants	352
Miles of water main	45.06

The water rates in Niles are 40c per 100 cu. ft. for the first 1,333 cu. ft.; 30c per 100 cu. ft. for the next 2,000 cu. ft.; 10c per 100 cu. ft. for the next 100,000 cu. ft., and 5c per 100 cu. ft. for all over 103,333 cu. ft.

The minimum charge on a ⅝" meter is $1.33 per month. Manufacturers are billed monthly and residences are billed quarterly. If the bill is not paid by the 20th of the month in which it is due, service is disconnected and a $1.00 charge for re-connection is made.

There are no hydrant rentals and no sprinkler charges.

BERT HOLLOWAY,
Superintendent, Department of Public Service.

Watertown, Wis.

Population	11,000
" served	8,000
Number of services	2,809
" " meters	2,809
" " hydrants	333
Miles of water main	37.5

The quarterly meter rates in Watertown are as follows:

First	750 cu. ft. per quar.	Minimum bill as shown below
Next	4,250 " " " "	@ 16c per 100 cu. ft.
"	20,000 " " " "	@12c " " " "
"	20,000 " " " "	@ 9c " " " "
All above	50,000 " " " "	@4½c " " " "

The minimum quarterly bill, which allows 750 cu. ft. of water, is as follows for each size of meter:

⅝" meters	$ 1.25
¾" "	1.50
1" "	2.00
1¼" "	2.25
1½" "	2.50
2" "	4.00
3" "	6.00
4" "	9.00
6" "	16.00
Elevators on 4" service	$ 4.00
" " 6" "	9.00
4" private fire service—quarterly	9.00
6" " " " "	16.00

All bills are net if paid before the 16th of the month, with a 10% penalty added if paid after the 15th of the month. Meters in buildings or lots which serve more than one tenant are charged the minimum rate for each tenant served. A charge of $1.00 is made for turning on water where it has been turned off for violation of rules or regulations, or for non-payment of bills. All bills are payable quarterly, January 1, April 1, July 1 and October 1.

The present hydrant rental is $6,800 per year, or about $20 per hydrant. The City Council recently passed a new ordinance, which was approved by the Public Service Commission of Wisconsin, changing the hydrant rental to 5% of the cost of laying the main, based on the length of the main put into use between the terminal hydrant connection and the connection for the next hydrant set in place. The new rate will probably go into effect April 1, 1935.

All meters are furnished free by the Water Commission. Services are laid free to the curb by the Commission, and the mains are furnished free by the Water Commission and Common Council.

H. G. REICHARDT,
Superintendent, City Water Department.

Honolulu, Territory of Hawaii

Population	146,000
" served	145,000
Number of services	18,467
" " meters	18,467
" " hydrants	1,767
Miles of water main	249.0

The meter rates now in force were adopted and became effective January 1, 1933, and are as follows:

First 25,000 gals. of water per month, or any part thereof, the domestic rate of 18c per 1,000 gals.
In excess of 25,000 gals. and under 250,000 gals. per mo., the intermediate rate of 14c per 1,000 gals.
In excess of 250,000 gals. per mo., the manufacturing rate of 10c per 1,000 gals.

In addition, for each service there is a monthly charge based on the size of the meter, as follows:

⅝" meter	$ .50
¾" "	.75
1" "	1.00
1½" "	1.50
2" "	2.50
3" "	5.00
4" "	7.50
6" "	15.00
8" "	25.00
10" "	45.00
12" "	75.00

These rates are collected monthly, with no penalties or discounts. As there is a large volume of sales to trans-Pacific shipping, a special rate of 50c per 1,000 gals. is charged to all foreign, coastwise, government, inter-island and fishing vessels.

Services are originally paid for by the property owners, with the Board of Water Supply furnishing the meter and meter box.

At the present time there is no charge for private fire sprinkler services, nor is any revenue received from the city government for fire hydrant service.

FREDERICK OHRT,
Manager and Chief Engineer, Board of Water Supply.

NOTE.—This report is included in this series, since the territory of Hawaii is an integral part of the United States.

REPORTS PUBLISHED IN 1935

January—
Aberdeen, Wash.
Ann Arbor, Mich.
Astoria, Ore.
Cairo, Ill.
Danville, Va.
Fitchburg, Mass.
Ridgewood, N. J.
Webster, Mass.
Westfield, Mass.

February—
Alliance, Ohio
Anaheim, Calif.
Chicago Heights, Ill.
Compton, Calif.
Dubuque, Iowa
Forest Park, Ill.
Fresno, Calif.
New Kensington, Pa.
Perth Amboy, N. J.
Royal Oak, Mich.
Schenectady, N. Y.

March—
Appleton, Wis.
Ashland, Ohio
Endicott, N. Y.
Greenville, Texas
Hamilton, Ohio
Hazleton, Pa.
Hudson, N. Y.
Janesville, Wis.
Johnstown, Pa.
Lockport, N. Y.
Olean, N. Y.
Parkersburg, W. Va.

April—
Bucyrus, Ohio
Corning, N. Y.
Cuyahoga Falls, Ohio
Duluth, Minn.
Ellwood, Pa.
Honolulu, Territory of Hawaii
Marquette, Mich.
Middletown, Ohio
Niles, Ohio
Nutley, N. J.
Ogdensburg, N.Y.
Watertown, Wis.
West Springfield, Mass.

In 1934 reports were published from 237 cities. These earlier reports are available from THE AMERICAN CITY in pamphlet form, price $1.00.

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47 Reasons why it will *out-perform* and *out-earn*

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For startling performance and greater economy

See the revolutionary dual performance axle now available in the 2-3 ton range. It provides a high-high gear (5.14 to 1) for fast movement on the level at economical engine speed and a low-high gear (7.15 to 1) which assures improved performance with heavy loads on hills or where the going is hard.

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It costs more to equip the quality 1½-2 ton GMC with Drop-Forged Wheels *but they are 2 to 3 times stronger than other types. Furthermore, the rims are part of the wheels —therefore tires are always in perfect alignment, with the result that tire life is greatly lengthened.*

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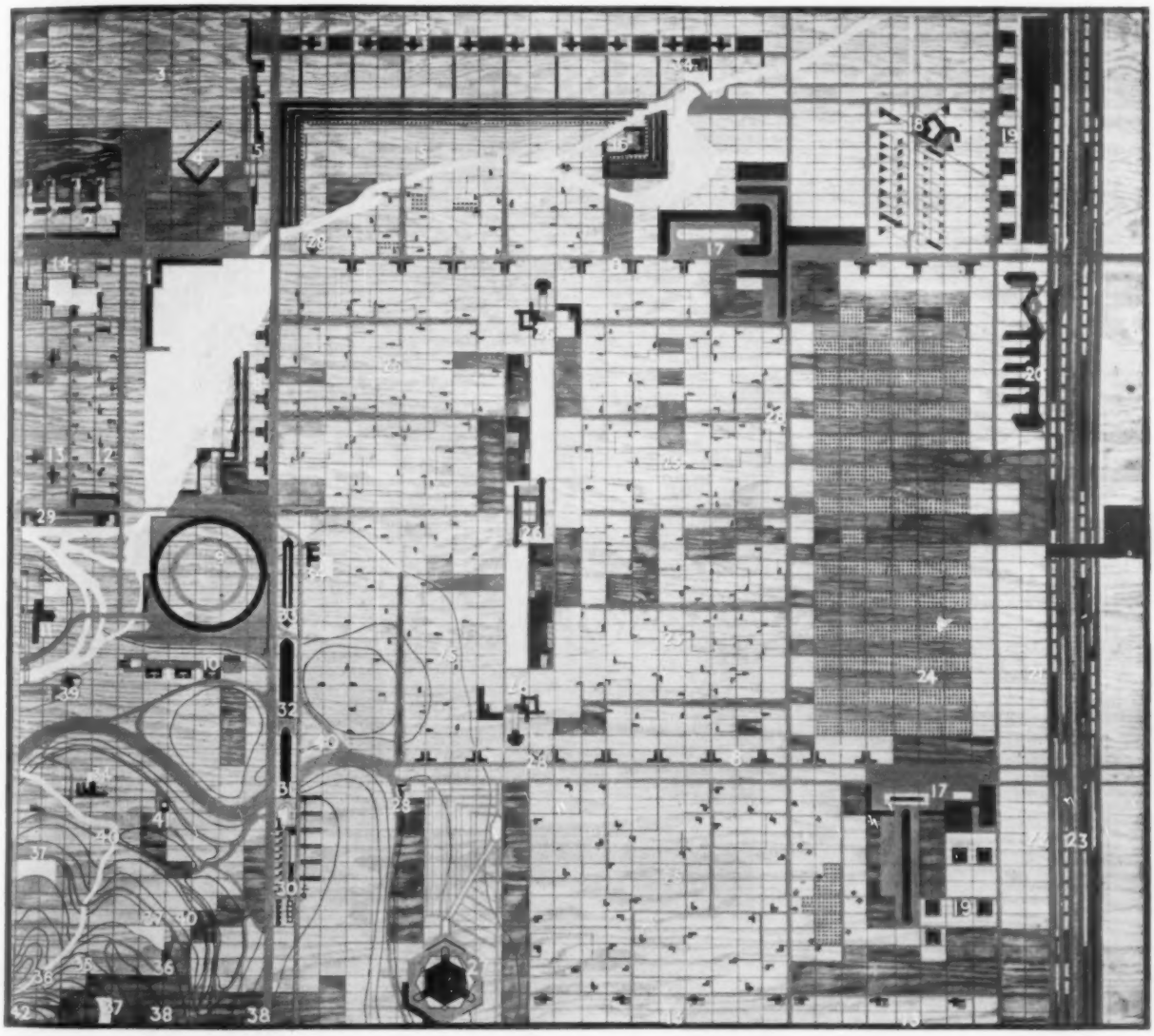
Mention THE AMERICAN CITY—it helps.

An Architect Visualizes "Broadacre City"

A NEW type of community, a model of which is to be shown to New Yorkers for the first time next month at the Industrial Arts Exposition in Rockefeller Center under the auspices of the National Alliance of Art and Industry, has been planned by Frank Lloyd Wright, one of the originators of the modern movement in architecture. It is described in a 12-page article by Mr. Wright in the April number of *The Architectural Record*, to which THE AMERICAN CITY is indebted for the accompanying illustrations.

The elements of Mr. Wright's plan are the correlated farm, the factory from which smoke and gases have been eliminated by the burning of coal to create electric power at the mine, decentralized schools, home offices, safe traffic, simplified government. There are to be small farms, small factories, small homes for industry, small schools and small laboratories on home grounds, all working in coordination.

The model and plan show four square miles of "Broadacre City," as the self-contained community is called by its creator. In this area about 1,400 families would be accommodated. Every disposition of buildings, lands, highways and parks has been made with a view to providing the maximum of convenience



PLOT PLAN OF FOUR SQUARE MILES OF "BROADACRE CITY"

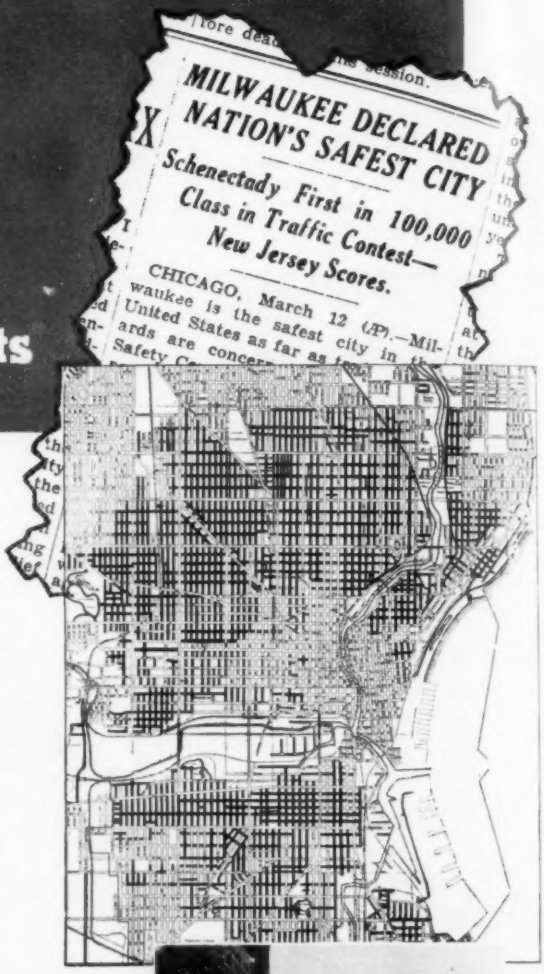
1. County-seat—Administration
2. Aerotor—Post Port and Administration
3. Polo
4. Baseball
5. Clubs
6. Lake and stream
7. Crafts and County Architects
8. Professionals
9. Stadium
10. Hotel
11. Sanitarium
12. Small industry
13. Small farm units
14. Small apartments
15. Interior park
16. Music garden
17. Merchandising
18. Automobile Inn
19. Little factories with dwellings above
20. Factory assembly
21. Aerotor service
22. Aerotor factory
23. Main arterial (the present railway)
24. Vineyards and orchards
25. Homes
26. Schools
27. Temple—columbarium and cemetery
28. Neighborhood guest houses
29. Baths and dressing rooms
30. Scientific and agricultural research
31. Arboretum
32. Zoo
33. Aquarium
34. Luxurious dwelling (House on the Mesa)
35. Taliesin (equivalent)
36. Luxurious homes
37. Water supply
38. Forest cabins
39. Country club
40. Apartment houses
41. Small school for small children
42. Automobile objective

THE NATIONAL SAFETY COUNCIL'S

First Prize

AGAIN GOES TO MILWAUKEE

the city of Tar Streets


MILWAUKEE DECLARED NATION'S SAFEST CITY
Schenectady First in 100,000 Class in Traffic Contest—New Jersey Scores.
CHICAGO, March 12 (AP).—Mil-
waukee is the safest city in th
United States as far as t
ards are concer
Safety C

The City of Milwaukee has used more tar on its streets than perhaps any other city in the country . . . and for the third successive year, the first prize in the National Safety Council's nation-wide contest for the safest American city goes to Milwaukee.

This is no coincidence. Hundreds of street and highway officials know from experience that tar surfaces are skid-proof, wet or dry. Many of them have applied tar as a surface treatment over dangerous slippery surfaces to make them safe and non-skid.

Koppers has a special reason for rejoicing at Milwaukee's honors, for it has been Kopper's privilege to supply Tarmac for Milwaukee streets for years.

For skid-resistant highway surfaces . . . use tar.

These photographs show some of the 234 miles of Milwaukee streets paved with Tarmac. The black lines in the map show the location of these Tarmac surfaces.

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Tarmac

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Other Koppers Products: Roofing, Water-proofing, Dampproofing, Traffic Paints, Tar-Base Paints, Creosote.

FRANK LLOYD WRIGHT'S MODEL OF A "BROADACRE CITY" DEVELOPMENT

in work and leisure, with safety on highways and in industries.

The great arterial right-of-way in the plan consists of many lanes of speed traffic above, with monorail speed trains in the center and truck traffic on lower side lanes. Within the structures of all highways are storage facilities for all raw materials, eliminating unsightly accumulations.

"All public utilities," says Mr. Wright in his *Architectural Record* article, "are concentrated in the hands of the state and county government, as are matters of administration, patrol, fire, post, banking, license and record, making politics a vital matter to every one in the new city, instead of the old case where hopeless indifference makes 'politics' a grafter's profession. In the buildings for Broadacres no distinction exists between much and little, more and less. Quality is in all, for all, alike. The thought entering into the first or last estate is of the best. What differs is only individuality and extent. There is nothing poor or mean in Broadacres. Nor does Broadacres issue any dictum or see any finality in the matter either of pattern or style."

The model on which Mr. Wright is working is nearing completion by the Taliesin Fellowship at Taliesin, Wis. The Industrial Arts Exposition at which it is to be introduced in New York will open at Rockefeller Center on April 15.

A New Technique for Handling Prostitution Cases

MANY of the present methods of handling prostitution cases are denounced as "silly and futile" by Magistrate Anna M. Kross in a report to Mayor LaGuardia of New York, recommending that the Women's Court be abolished and that vice be treated as a social problem.

Mrs. Kross's recommendation, as reported in *The New York Times* of March 9, include:

"1. *In lieu of policemen, plainclothes men, or stool pigeons:*

"Socially trained, well paid medical workers, empowered to apprehend all persons engaged in the practice of prostitution and, therefore, liable to have contracted a venereal disease.

"2. *In lieu of a technical legal complaint and charge and legal evidence:*

"A complete medical, physical, mental examination, social history and environmental investigation, obtained prior to hearing.

"3. *In lieu of the Women's Court:*

"An informal tribunal consisting of a doctor, a psychiatrist and a lawyer.

"4. *In lieu of our present archaic, unsound, hypocritical, chaotic laws:*

"A liberal, modern, scientific, social health code, applicable to both men and women, giving full power to this tribunal to apprehend and detain.

"5. *In lieu of sentence:*

"A medical, psychological and social diagnosis on the basis of which appropriate treatment will be prescribed to meet the needs of the individual offender, utilizing all the community's present resources for protection, correction, medical relief, social service, education and guidance, and utilizing other instrumentalities that may be developed out of the requirements of the procedure, to provide adequate medical treatment with detention in a hospital if necessary, until the patient is completely cured; protection and care for those who are feebleminded and mentally diseased; reformatory training toward economic and social rehabilitation for habitual offenders, and intelligent probationary supervision for the woman who is found to possess those innate qualities which will enable her to make a satisfactory readjustment in society.

"6. *In lieu of our present costly and ineffective system of prison, reformatories and punitive and corrective institutions:*

"(a) Utilization of the present Detention House for Women as the initial reception bureau and hearing rooms.

"(b) Provision for an adequate medical set-up of medical, social, venereal clinics and hospitals in conjunction with the Board of Health.

"(c) Utilization of present public and private agencies of reformatory character for economic and social rehabilitation purposes.

"(d) Provision for an adequate number of probation officers for follow-up work, both medical and social.

"(e) Intensification of propaganda for the prevention of venereal disease; intelligent sex and mental hygiene guidance for the entire community, with especial attention to the needs of young people.

"7. *In lieu of our present public policy of repression and punishment:*

"A scientific, modern viewpoint which will seek the fundamentals of the problem, and make an honest endeavor to reach the causative factors of this social manifestation, as well as treat its symptoms."

Clean Up, Against Fire

Clean-Up Weeks have been urged and put over for a number of years, on the proposition that "a clean house seldom burns." The work, however, extends beyond the house and embraces stores, factories, vacant lots, alleys and avenues. This year's suggested program begins with church, and through the week calls for participation by teachers, industries, business men, clubs, public officials, and ends on Saturday with Everybody's Day. For information and posters, address T. Alfred Fleming, Clean-Up Campaign, National Fire Prevention Association, 85 John Street, New York.

One of five Austin-Western Sweepers owned by the City of St. Louis

● Today the Austin-Western Motor Pickup Sweeper provides an additional factor of quick, complete, and economical street sweeping. This factor is the addition of Hydraulic Controls—a feature that improves all other features. These controls save the operator's energy, and continue his skill and alertness without fatigue to the end of the day. This great value to the operator will be recognized as of equal or greater importance to his employer.

The Squeegee Type Elevator, and the Pickup Broom are controlled from the driver's seat by two levers — foolproof hydraulic controls, quick and positive in their response, uniform in their action for long periods without attention or adjustment!

In combination, the many advantages of the Austin-Western Motor Pickup Sweeper, topped with this flexible and reliable control, appeal strongly to every one responsible for clean streets. Send the coupon below for full summary of advantages.

Other Features . . .

Oscillating Gutter Broom, 2-speed, enclosed gears.
4-Wheel Truck-Type Chassis.
All-round visibility. . . . SKF Bearings.
Molybdenum steel squeegees on dirt elevator, non-corrosive and rust resisting.
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DUMP CARS
CRUSHING AND WASHING PLANTS · SWEEPERS AND SPRINKLERS · SHOVELS · CRANES · ETC · SNOW PLOWS

During April we hope you will remember to mention THE AMERICAN CITY

Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

ZONING and PLANNING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

Non-Conforming Use

NEW JERSEY.—*Dickenson and others v. Inhabitants of City of Plainfield and others*, 176 Atl. 716 (Supreme Court, February 5, 1935).—In 1926 the prosecutors, Dickenson and others, acquired a property at the corner of Park Avenue and Seventh Street in the city of Plainfield and constructed on it a two-story building with frontages on both streets. The Park Avenue frontage was used as a store for the display and sale of Packard automobiles. The Seventh Avenue frontage was used as a garage and service station. The use of the service station has been continuous. The prosecutors lost the automobile agency and in 1934 entered into a ten-year lease with a prospective tenant based upon the assumption that they would turn the Park Avenue frontage into a modern service station, obtained a permit and began alterations. A garage is not allowed in the zoning district in which the building is situated, and, in so far as it was so utilized, was a non-conforming use there.

On application to the board of adjustment by neighboring property owners on Park Avenue, the board revoked the permit for the alterations, on the ground that on the Park Avenue front the permit sought, contrary to the zoning ordinance, to set up a non-conforming use where none existed before; overruling the claim of the owners that uses which were thoroughly hidden from Park Avenue and which had entrance and exit solely on Seventh Street could be extended to the Park Avenue front, including the tearing-out of the Park Avenue walls up to the second story, installing the usual service station equipment of oil and gas tanks and the like, and converting adjacent portions of the Park Avenue sidewalk into entrance and exit driveways.

And on appeal by the owner of the property to the district and to this Court the decision of the board of adjustment was upheld, and its permit for the changes on Park Avenue revoked.

EDITOR'S NOTE.—Under the New Jersey statute, where the land in question does not abut a district in which such structure or use is authorized by the zoning ordinance or where it is more than 150 feet beyond the boundary line of that district, the board of adjustment recommends the local legislative body as to the granting of a variance for hardship and the variance is granted or refused by that body. In so acting, the local legislative body, as was decided in *Fonda v. O'Donahue*, digested in our Notes for February, 1933, acts in an administrative capacity, and its decisions may be reviewed, as in the present case, by certiorari.

Zoning—Garage—Unnecessary Hardship

NEW JERSEY.—*Gabrielson v. Borough of Glen Ridge*, 176 Atl. 676 (Supreme Court, February 4, 1935).—The prosecutor Gabrielson is the owner of a tract of land upon which he seeks to erect a gasoline filling station. The Building Inspector denied the permit because it would be contrary to the zoning ordinance to grant it. Thereupon the prosecutor applied to the board of adjustment for a recommendation to the Mayor and Council to grant the variance allowing the issuance of the permit for the garage, for the reason that, owing to special circumstances, a literal enforcement of the ordinance will result in unnecessary hardship. The board of adjustment ruled in favor of the prosecutor and recommended the Mayor and Council to grant the variance with certain conditions. The Mayor and Council refused to grant the variance, and the prosecutor appeals to this Court; the Court sets aside the action of the Mayor and Council declining to approve the recommendations of the board of adjustment, and mandamus is issued requiring the Building Inspector to issue the permit.

The owner's land is all within the corporate limits of Glen Ridge, but is opposite the town of Bloomfield, the line between the two municipalities at that point being the middle line of Bloomfield Avenue. The land on Bloomfield Avenue in Bloomfield, opposite the owner's land, is zoned for business. Opposite the owner's land in Bloomfield, and nearby in that municipality, are a garage, a saloon, a hotel, a restaurant, stores and factories. There was testimony that by reason of the adjacent business properties the land of the owner could not be advantageously used for high-priced dwellings such as would be required on land of such value in order to make adequate return on its value. But the Court does not deem this to be a controlling factor in a case of this sort. The question is whether the restriction imposed is arbitrary and unreasonable and without substantial relation to public health, safety, morals or the general welfare of the community.

The staute, adopted in pursuance of the constitutional amendment permitting zoning, provides as follows:

"5. *Purposes in View.*—Such regulations shall be made in accordance with a comprehensive plan and designed for one or more of the following purposes: to lessen congestion in the streets; to secure safety from fire, panic and other dangers; to promote health, morals or the general welfare; to provide adequate light and air; to prevent the overcrowding of land or buildings; to avoid undue concentration of population. Such regulations shall be made with reasonable consideration, among other things, to the character of the district and its peculiar suitability for particular uses, and with a view to conserving the value of property and encouraging the most effective use of land throughout such municipality."

There is no proof in this case to show that the use of this property for a garage will violate any of these purposes. For this reason the actions of the Mayor and Council, declining to approve the recommendations of the board of adjustment, are set aside and mandamus is issued to compel the issuance of the permit.

Open-Air Parking Spaces

NEW YORK.—*Monument Garage Corporation v. Levy, President of Borough of Manhattan, City of New York* (Court of Appeals, February 26, 1935).—The Monument Garage Corporation occupies under a lease a vacant plot of land in the borough of Manhattan, city of New York, which is partly in a residential, partly in a business, zoning district. It wishes to use this land for the parking of automobiles for hire. For this purpose there must be a lowering of the curb to provide a carriageway across the sidewalk. The Garage Corporation therefore applied to the Borough President for permission to lower the curb, which was refused.

The Zoning Resolution of the city forbids the use of any building or premises in a business district for the storage of more than five motor vehicles. The Borough President contends that this section prohibits the contemplated use in a business district; but the Court holds that this is not so, since there is a substantial difference between parking and storage; and parking is therefore permissible, and the Borough President must allow the lowering of the curb for this lawful use.

The question still remains whether such a use is lawful in a residence district. The answer is that parking for hire is a business, and is therefore not allowed. It is urged that the word "premises" does not include vacant land; but the Court holds that vacant land is included in that word. The use of land in a residential district for the parking of automobiles for hire is therefore illegal and the Borough President cannot be compelled to cut the curb for that purpose.

EDITOR'S NOTE.—The parking of automobiles on vacant lots for hire is a serious zoning problem in all our large cities. The pressure for parking cars off the streets, especially in business districts, is constantly increasing; and the number of buildings destroyed to lessen tax payments during the depression is also steadily becoming greater. Conditions in New York are more or less typical of those in other cities. There have been several legal decisions with regard to such parking in the New York courts (see these Notes for April, 1933, October, 1934, February, 1935), still leaving the situation confused. The decision of the highest court in New York with regard to the matter given above clarifies the situation in that state, and is of importance elsewhere.

In 1928 the Board of Estimate and Apportionment of New York City amended the Building Zone Resolution by prohibiting the storage of more than five motor vehicles as a matter of right in a business district, the property owner feeling himself aggrieved having the right to resort to the Board of Appeals in exceptional cases, as in other instances of claimed hardship. There is no doubt that the Board of Estimate intended in this amendment to place garages and open-air parking spaces on the same footing. With the increase of vacant lots there was an increase in open-air parking spaces for hire, and in many cases the officials, glad to have parked cars off the streets, did not object. Neighbors, however, protested, officials in some cases refused permission to cut the curb in order to obtain automo-

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bile entrances to these spaces, and the owners of the vacant lots took the matter into the courts. In some cases the cut permits were demanded for this purpose in residential districts. One justice, in a lower court, held that vacant land was not subject to zoning regulations. Such a decision if allowed to stand would have been calamitous.

The Monument Garage decision holds that the provision of the Building Zone Resolution prohibiting the storage of more than five automobiles in a business district does not apply to open-air parking spaces. The reasoning of the Court is that the word "storage" implies a somewhat permanent placing and not a temporary parking. Inasmuch as parking spaces in business districts are lawful under the Monument Garage case, permits for cutting the curb will be granted as a matter of right. However, as parking spaces in residence districts are a business prohibited in such districts, curb cuts must be refused in these districts. It is also held that the building zone regulation applies to vacant land as well as buildings.

Many property owners will be disappointed at this sweeping decision. Of course it is possible to amend the Building Zone Resolution so as to prohibit parking spaces in business districts; but such spaces are now so largely in use and there is such a widespread demand for their continuance that it is doubtful whether the Board of Estimate will enact such an amendment.

This decision, binding in the state of New York, is of course only a strong precedent in other states; and it remains to be seen whether or not they will follow it in ruling upon similar provisions of zoning ordinances in the other jurisdictions.

Planning in Yonkers, N. Y.

The Progress Report for 1934 of the City Planning Commission of Yonkers, N. Y., is a book of over 200 pages covering all phases of planning in that city. Of legal interest are Chapter VII, Street Acquisition and Widening Procedure; Chapter XII, Land Subdivision; and Chapter XIII, Zoning.

Country Planning

Of especial interest to the careful student of open development and the preservation of open spaces is the English Town and Country Planning Act, 1932-1933. From time to time many valuable articles with relation to this Act have appeared in the *Journal of the Town Planning Institute* (11 Arundel Street, London, W. C.). In the January number of the *Journal*, occupying together most of that issue, are two articles with relation to so-called "Ribbon Development," the development of the land immediately adjoining the highway, and "Town and Country Planning," including Interim Development, or the control of land pending its more intensive utilization.

Lectures on Housing

The New School for Social Research (66 West 12th Street, New York) is conducting, on Mondays, 8:20 to 10 P.M., for the ten weeks which began March 18, a series of lectures on Social, Economic and Financial Aspects of Housing, by Ernst Kahn, formerly financial editor of the *Frankfurter Zeitung*, and, with Ernst May as designer, in charge of the remarkable housing developments in the city of Frankfurt.

Slum Reclamation, Low-Cost Housing and Eminent Domain

To the Editor of THE AMERICAN CITY:

It has always seemed to me a basic weakness of many persons working in this field that they made provision of low-cost housing an essential feature of a slum reclamation project. Several years ago I took this up with the RFC, and had just pushed the matter to the point of decision when RFC went out of housing work and the New Deal set-up came in. But the New Deal apparently started off with the same, as it seems to me, confusion of ideas. My belief is that:

1. Slum reclamation is one thing;
2. Provision of low-cost or low-rented housing is another thing.

These two things are distinct in fact, in purpose, in objective, and in law.

I believe that the purposes of both are public purposes and that, therefore, the power of eminent domain may be invoked to further them, but that the arguments for one are so distinct in many respects from the arguments for the other that presenting them together tends to confusion.

The public purpose of slum or decadent area reclamation is to remove a community liability as serious as the silting-up of a seaport's harbor. (See figures on cost of slums in Cleveland, Boston and Washington.) As a proper corollary to dredging a harbor, government may build wharves, etc., to make that harbor an asset to the community. So as a corollary to reclaiming a slum or decadent area, government may erect on the site those improvements that will benefit the neighborhood or the community. Obviously, in reclaiming a slum or decadent area, government is limited to specific parcels of land and the encumbrances on them. Consequently, it must have power to acquire those specific parcels.

The public purpose of providing low-cost or low-rental housing is based upon the allegation that proper housing cannot otherwise be secured for the persons in need. Low-*rental* housing may be subsidized, which, of course, raises other questions of both policy and law. This housing need not be on any one site unless it can be shown that a particular site offers peculiar advantages, as in cheapness, accessibility, etc. The legal basis for a condemnation suit would therefore it seems to me, be quite different from the basis for a slum reclamation suit.

Decision as to whether provision of low-cost or low-rental housing is a public use might be affected by the new ownership of the property. If the property were turned over to a limited dividend corporation or a non-profit corporation in order that there should be provided at minimum cost a needed neighborhood or community facility, that corporation would be closely analogous to a railroad or other public utility that now has rights of eminent domain. The fact that, unlike a park, everyone may not occupy a house at any one time seems to me immaterial. Playgrounds are restricted to persons of given age, sex, color. When they are fully occupied, no more can enter until present occupants have left. So with a railroad train. So with a house. The playground may not be available for others for an afternoon, a railroad car until it has completed its journey, a house until the present lease expires. Then each becomes available to other members of the public.

JOHN IHLDER.

Washington, D. C.
March 12, 1935.

The Municipal Bond Market

Typical sales of new issues from March numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$1,000,000	New Hampshire, Perm. Highway	2	1-10 Ser.	1.36
423,000	Black Hawk Co., Iowa, Primary Road Refunding	2	1-9 Ser.	1.60
193,000	Morris Co., N. J., General Improvements	3	4.33 Avg.	2
45,025,000	New York, Unemployment Relief, Emergency Construction, General State Improvements, Grade Crossing Elimination	2.4 Avg.	15.1 Avg.	2.30
537,000	Memphis, Tenn., Refunding and Funding	2.5	5 Avg.	2.30
117,000	Wyomissing, Pa., Water	2.75	14.75 Avg.	2.61
470,000	Berks Co., Pa., Refunding	2.75	17.66 Avg.	2.63
1,000,000	Louisville, Ky., Sewer	2.75	34	2.73
1,964,000	New York, N. Y., Subway and Water Tunnel, Improvement	4	5.33 Avg.	2.85
1,300,000	Waterbury, Conn., Funding, Street, General Improvement	2.93	16.6 Avg.	2.89
360,000	Richmond, Ind., Sewage Disposal System	3.25	13 Avg.	3.23
538,000	Columbus, Ohio, City Hall Bldg. Fund, Incinerator, Miscellaneous	3.45 Avg.	15.12 Avg.	3.39
229,500	Charlotte, N. C., Various Purposes	4	13.33 Avg.	3.54
195,000	Putnam Valley, Carmel and Cortland, N. Y., School	3.80	12.5 Avg.	3.76
125,000	Cranford Tp., N. J., Trunk Sewer	4.25	2-26 Ser.	4.23

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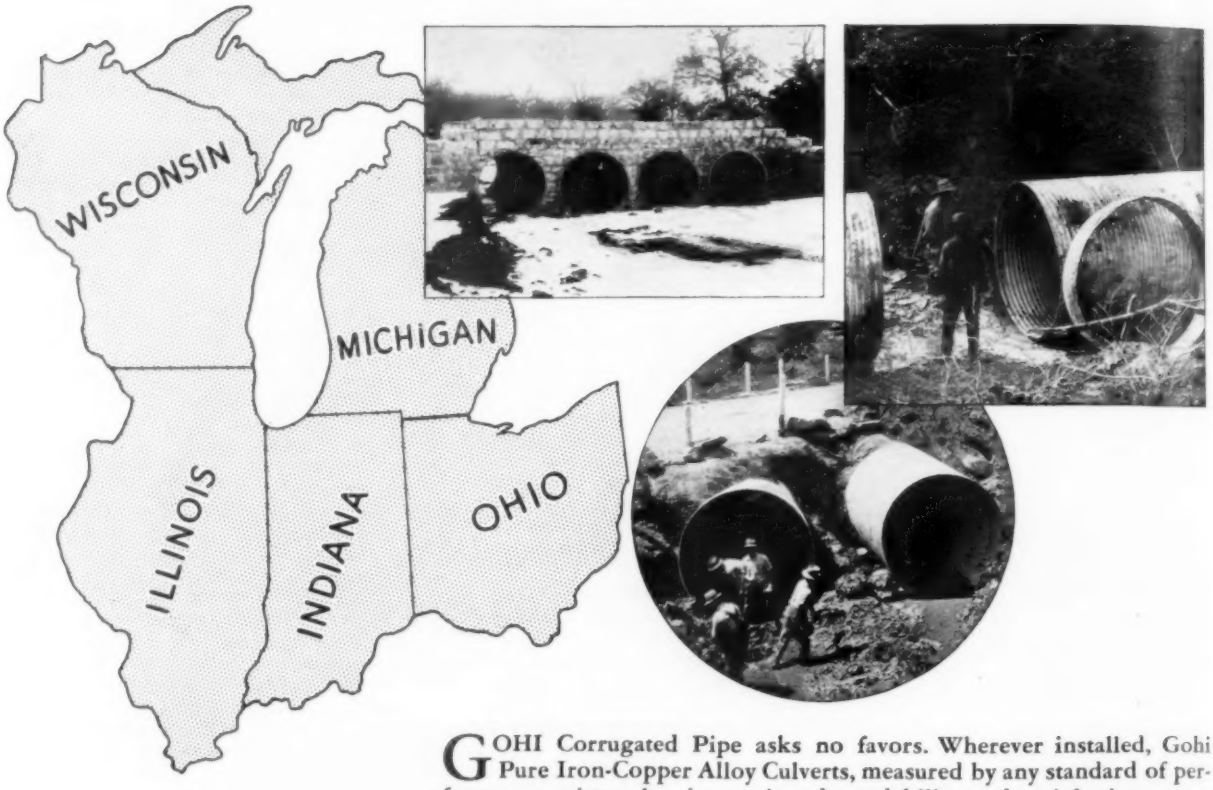

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The Newport Culvert Co.....Newport, Ky.
New England Bolt Co.....Everett, Mass.
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THE CITY'S LEGAL RIGHTS AND DUTIES

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Accidents

Presence of City Manager immediately after city employee was accidentally killed held to obviate necessity for statutory notice to city of death (Florida Supreme Court: *City of Gainesville v. Kirkland*, 156 So. 601).

City held not liable for injury to automobile due to negligent maintenance or operation of garbage trailer (Louisiana Court of Appeal: *Manguno v. City of New Orleans*, 155 So. 41.)

Evidence held to warrant recovery by pedestrian who tripped over sidewalk sill in temporary sidewalk shed (New York Court of Appeals: *West v. City of New York*, 191 N. E. 864).

City held liable to huckster for collapse of a city market shed, due to neglect of city (New Jersey Supreme Court: *Buckelow v. City of New Brunswick*, 174 Atl. 699).

Gas company held liable for injury to motorcyclist caused by depression in street resulting from improper refilling after excavating to repair main (New Hampshire Supreme Court: *Emerson v. Twin State Gas & Electric Co.*, 174 Atl. 779).

Bonds

Holder of bonds or coupons held entitled to compel provision for payment (Florida Supreme Court: *State v. Walsma*, 152 So. 196).

Mayor held without discretion to refuse to sign bonds issuance of which he deemed unwise but which had been authorized by vote and judicial validation (Florida Supreme Court: *State v. Armstrong*, 151 So. 535).

Despite false recital of statutory authority for issue of bonds to fund floating debt bonds held invalid (United States District Court, Eastern District of Kentucky: *First Trust Co. v. County Board of Education, Whitley County*, 5 Fed. Supp. 49).

Vote of electors authorizing bond issue held to imply sinking-fund tax levy required by constitution (Kentucky Court of Appeals: *McDonald v. City of Lexington*, 69 S. W. 2d. 1065). On later appeal in same case held that ordinance validly provided for sinking-fund and interest levies (70 S. W. 2d. 534).

That funds were improperly used to retire matured bonds, for lack of other funds, did not prevent a tax levy to replace the funds so appropriated (Illinois Supreme Court: *People v. Atchison, Topeka & Santa Fe Railway Co.*, 190 N. E. 362).

Statute reducing debt limit held not to prevent issue of bonds authorized before amendment (Oregon Supreme Court: *Harvey v. Clark*, 32 Pac. 2d. 591).

Port district assuming obligation of city bonds issued for harbor held bound whether bonds were constitutionally issued or not (Florida Supreme Court: *State v. Broward County Port Authority*, 151 So. 718).

City held not liable to bank on interest coupons on bonds that had been redeemed under option recited in bonds (Pennsylvania Superior Court: *Fulton National Bank v. City of Lancaster*, 172 Atl. 34).

Holders of improvement bonds held entitled to enjoin city's acceptance of its bonds in payment of taxes, to the prejudice of such holders (United States District Court, Southern District of Florida: *Harris v. City of Miami*, 6 Fed Supp. 305).

Mandamus issued against city at instance of bondholder to require installment payment of past due bonds where city's financial condition would not permit single payment (Florida Supreme Court: *State v. Baskin*, 154 So. 326).

Water bonds payable out of net revenues held to create debt requiring electoral assent (Utah Supreme Court: *Wadsworth v. Santaquin City*, 28 Pac. 2d. 161).

Bridges

Omaha held authorized to build bridge across Missouri River and to issue bonds payable from tolls (Nebraska Supreme Court: *Kirby v. Omaha Bridge Commission*, 255 N. W. 776).

Municipal duty to make reasonable inspection of bridges to ascertain safety held not to require expert tests and removal of planks (Pennsylvania Court of Common Pleas, Lancaster: *Stinger v. County of Lancaster*, 25 Pa. Munic. L. Rep. 211).

Civil Service

Commission held to have improperly discharged fireman having highest rating while retaining others on same list having lower rating (Minnesota Supreme Court: *State v. Ritchel*, 255 N. W. 627).

Claims

Statute governing claims against city for "neglect or wrongful injury to personal property" held not applicable to claim for converting or negligently selling an automobile (Alabama Supreme Court: *City of Birmingham v. Davis*, 155 So. 94).

Condemnation Proceedings

Notice of intention to improve street and property owners' failure to protest held not to waive claim for damages for grade separation (California District Court of Appeal: *Musto-Keenan Co. v. City of Los Angeles*, 34 Pac. 2d. 506).

Depositories

Illinois banks held not empowered to pledge assets as security for municipal deposits (United States Supreme Court: *City of Marion, Ill., v. Sneeden*, 54 Sup. Ct. 421).

City held not preferred creditor of bank where proceeds of bonds and coupons were deposited in general checking account (Illinois Supreme Court: *People v. State Bank of Warren*, 188 N. E. 546).

Finances

Emergency statute forbidding suits against municipalities to compel tax levies to pay debts, unless authorized by court or judge, upheld by vote of seven to six justices (New Jersey Court of Errors and Appeals: *Hourigan v. North Bergen Township*, 172 Atl. 193).

Current liabilities held properly payable through temporary borrowing of idle funds (Illinois Supreme Court: *People v. New York Central Railroad Co.*, 188 N. E. 807).

Pensions

Taxpayer held to have failed to prove that Assistant Corporation Counsel was fraudulently appointed for sole purpose of bringing him within retirement allowance system (New York Supreme Court, Special Term, New York County: *Wilmerding v. O'Brien*, 268 N. Y. Supp. 206).

Special Assessments

Official determination that paving contract was substantially performed held not subject to collateral attack in suit to enjoin collection of special assessments. Paving contract held not so changed, by omission of pavement and change in sewer, as to constitute remediable fraud against property owners (Indiana Appellate Court: *Crawshaw v. Mead-Balch Construction Co.*, 191 N. E. 91).

Special assessment liens held to have priority over mortgages, etc., but to be inferior to general tax liens (United States District Court, Middle District of North Carolina: *City of Winston-Salem v. Powell Paving Co.*, 7 Fed. Supp. 424). (See, also, decision of Florida Supreme Court in *City of Tampa v. Barbee*, 155 So. 751.)

Water Departments

Home rule charter, not general statutes, held to control extension of city water mains; objection to assessment for such extension as exceeding benefits held waived because not seasonably made to board of equalization (Nebraska Supreme Court: *Pester v. City of Lincoln*, 255 N. W. 923).

Contract held to require city to pay for power for pumping water on basis of contract speed of pumps (Virginia Supreme Court of Appeals: *Town of Ashland v. Newman*, 175 S. E. 724).

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Planning

Outline of Town and City Planning—A Review of Past Efforts and Modern Aims.—By Thomas Adams, D. Eng., Associate Professor, School of City Planning, Harvard University. Foreword by Franklin D. Roosevelt. Russell Sage Foundation, New York. 1935. 368 *pp. Many illustrations.* $3.00 *from* THE AMERICAN CITY.

Both the early history of town and city planning and an analysis of the influences and forces affecting the aims and methods of modern city planning are presented in this important book. The dividing line is drawn about 1830. Each division of development is made vivid with concrete examples and authentic illustrations, and the significance of every phase is made clear. The comprehensive scope includes, in Part I, ancient cities (in Egypt, India, China, Japan, Central America, Greece, Macedonia, the Roman Empire), medieval cities (Teutonic, French, Belgian, Spanish, English), and cities which responded to the influence of the Renaissance (in Italy, France, England and Scotland, Germany and Austria, and early America). In Part II are traced the ways in which city planning has been affected in modern times by the production of power, by inventions, by improved methods of sanitation and public safety; by political, industrial and social changes; meeting the ambitions, needs and aspirations of human beings as these have emerged. This method, employed with especially compelling interest, calls forth many detailed accounts of local and regional development within and outside the United States. The aims, methods and trends of the art and science of modern city planning are presented and its future illuminated.

No brief review can do justice to this careful, well-founded study, which makes available experience and principles that concern all who must live with their fellow men.

The "Progress Report, 1934, of the City of Yonkers" is the second statement of work made to the citizens by the City Planning Commission of Yonkers, N. Y. It is an imposing, summarized presentation of the conditions and factors involved in solving many present and future problems of planning. The findings and recommendations cover the history and geography; population; transportation, transit, traffic; street improvement; automobile parking; parkways, parks and playgrounds; public education; land subdivision; zoning; private building construction and low-cost housing; public buildings; waste disposal; municipal finance and administration; and a six-year financial plan. 205 pp. Many views, charts, maps. (Apply to the City Planning Commission, Yonkers, N. Y.)

Traffic Engineering

"Traffic Engineering Education—A statement concerning the need of the Scientific Approach to traffic problems and of technical training thereafter." Published by the Institute of Traffic Engineers, 175 Fifth Avenue, New York. In 1932 there were three institutions offering separate courses in traffic control—the Universities of Michigan and Wisconsin, and the Missouri School of Mines. This pamphlet of 15 pages suggests subjects that should be included in a course in traffic engineering and stresses the need for research by the students.

Stream Control

The Stream Control Commission of the state of Michigan has issued its second biennial report, for 1933-1934. It is a comprehensive, well-illustrated presentation of progress in the control of stream pollution from sewage and industrial wastes; thorough, detailed and specific; also readable. A folding table is inserted which gives definitely the status of municipal projects in this field on January 1, 1935. 70 pp. (Apply to Milton P. Adams, Executive Secretary and Engineer, The Stream Control Commission, Lansing, Mich.

Engineering

The Proceedings of the Thirty-Seventh Annual Meeting of the American Society for Testing Materials, held at Atlantic City, N. J., June 25-29, 1934, have been published as Volume 34, in two parts: Part I, XIV + 1,325 pp.—Committee Reports, New and Revised Tentative Standards, Tentative Revisions of Standards; Part II, V + 943 pp.—Technical Papers. Tables, diagrams, charts, photographs. Covering the Society's activities in the development of its organization and in the furthering of scientific progress in the field of engineering materials. Paper, $11.00; cloth, $12.00; half-leather, $15.00. (Apply to the Society, 260 S. Broad Street, Philadelphia, Pa.)

Housing

A log-book of the first year and a half of the low-cost housing movement in the United States since government became actively interested in it, has been issued by the National Association of Housing Officials, and is announced by the Public Administration Clearing House. This first annual, entitled "Housing Officials' Yearbook, 1935," according to Dr. Coleman Woodbury, Executive Director of the Association, is the only publication which reports the proceedings of all the agencies in the public housing field. It reviews the problems and policies of the Housing Division of PWA, the history of the Federal Housing Administration, and the activities of the Federal Home Loan Board, subsistence homestead and rural rehabilitation agencies. In addition there are reports of state and local housing agencies. 76 pp. $1.00. (Apply to National Association of Housing Officials, 850 E. 58th St., Chicago, Ill.)

The December, 1934, issue of "*The Bulletin of the Beaux-Arts Institute of Design*" contains reports on a competitive project for apartment house development: a cooperative community of apartments on a hypothetical undeveloped site a mile from a business and industrial center, providing for 450 families of from two to seven persons, for whom the highest possible standard of living for families having a weekly income of $30 to $40 is to be secured; the conditions as to required facilities are interesting. First Medals were awarded to G. W. C. Raetze, Princeton University; J. J. Accardo, Columbia University; F. Scott, Jr., Yale University; J. M. Dickey, Princeton University. Nine Second Medals were awarded. Drawings of the various developments are reproduced. (Apply to the Beaux-Arts Institute of Design, 304 E. 44th St., New York.)

"Rational Site-Planning" is the title of Abstract-Translation No. 1, selected and translated by Werner Gottschalk, of New York City, and edited by the Housing Study Guild, 101 Park Ave., New York. It includes four papers read at the 3d International Congress at Brussels of the International Committee for the Solution of the Problems in Modern Architecture: "Low Buildings, Medium-High or High Buildings," by Prof. W. Grofius; "The Subdivision of Land in Cities," by Le Corbusier; "Dwellings for the Minimum Wage Earner," by Karel Teige; and "Analysis of Total Building Expenditures in 2- to 12-Story Buildings," by Boehm and Kaufman. 19 mimeographed pp. To be published ten times a year. $2.00. Plans, table. (Apply to the Guild.)

State Legislation

The Book of the States, Volume I, 1935.—Published by the Council of State Government and the American Legislators' Association. Chicago. 184 pp. This is a handbook of information concerning the states in their legislative aspects. A directory of the 7,500 state legislators is included; also tables of comparative legislation on taxation, liquor control and other subjects. (Apply to American Legislators' Association, 850 E. 58th St., Chicago, Ill.)

Water Supply

The Buffalo Municipal Research Bureau, Inc. (323 White Bldg., Buffalo, N. Y.), has issued (February, 1935) a mimeographed report on "The Municipal Pumping Stations of the Department of Public Works, Division of Water, of Buffalo—A Study of the Discontinuance and Electrification Proposed for the Massachusetts Avenue Station." Economy, and insured continuity of operation, are the factors considered in this study: what the city's water demand is, and what is required to meet it; the comparative cost of steam and electric power in the Massachusetts Avenue station; and the advantage, if any, of separated plants. (Apply to the Bureau.)

The "Report of the Board of Water Supply to the Legislature of the Territory of Hawaii, Eighteenth Regular Session, and the Mayor and Board of Supervisors, City and County of Honolulu, 1933-1934," issued February 20, 1935, is a detailed presentation of the operation and maintenance—engineering and financial—of the water-supply system of Hawaii. A particularly interesting section is the one relative to the resources of springs, tunnels, streams and artesian wells which affect the present and future water supply of Honolulu. This is a paper-bound book of 271 pages, with photographs, charts, tables, and maps, including many folding inserts. (Apply to Frederick Ohrt, Manager and Chief Engineer, Honolulu, Hawaii.)

Paving

The American Society of Municipal Engineers has published "Recommended Standard Specifications for Vitrified Brick Pavement and Brick Parking Strips and Gutters," submitted to the Annual Meeting of the Society at Rochester, N. Y., September 27, 1934, prepared by the Society's Committee on Brick Pavements. 26 pp. Illustrated. Copies are being distributed by the National Paving Brick Association, National Press Bldg., Washington, D. C., to which apply.

Municipal Administration

"The Alderman's Manual," by Frederick Rex, Librarian, Municipal Reference Library, Chicago, Ill., is a pocket-size pamphlet of 46 pages, giving instruction, information and procedure, specifically referring to Chicago, and applying in principle to members of city councils, boards of aldermen, and of town and village trustees, and candidates for the office of alderman or trustee, in municipalities in the United States. It is published by the Home Study Circle, Hubbard Woods, Ill., and is copyrighted. It is clear and definite, sufficiently detailed as to the activities of municipal administration, and explicit as to the duties and obligations of municipal officials and other citizens. $2.00. (Apply to the Home Study Circle, P. O. Box Four, Hubbard Woods, Ill.)

Land Use

The first number of *Land Policy Review* appeared in February, 1935, "presenting current information concerning national, state and local land research planning and policy," and issued by the Land Policy Section, Division of Program Planning, Agricultural Adjustment Administration, in cooperation with the Division of Land Economics, Bureau of Agricultural Economics, U. S. Department of Agriculture. It is a mimeographed publication; 14 pages in this first issue. It is intended to supply information about the progress of the submarginal land acquisition program, and of the land-use research and action programs of agricultural experiment stations, state planning boards, and other agencies and groups whose activities have a definite bearing on problems and policies of agricultural adjustment. L. C. Gray is the Chief of the Land Policy Section. (Apply to Agricultural Adjustment Administration, Washington, D. C.)

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Regional Planning

The Sixth Annual Report of the Monroe County (N. Y.) Regional Planning Board, for the year 1934, has recently been issued, in mimeographed form, with maps, tables and diagrams. It shows the continued use of white-collar workers employed by the Rochester-Monroe County Emergency Work Bureau, in professional, technical and other duties, to advance the planning program. The work completed includes financial studies of three towns and the county; and surveys of ground water resources and surface stream pollution. A study of tax delinquency of farm properties as compared to land values; the program of land utilization and classification; studies of traffic density and accident frequency; these are under way. A new county map has been published; property boundary maps for several towns have been completed, and base maps for each of the towns in the county will soon be finished. Send 21c postage. (Apply to J. Franklin Bonner, Secretary, Monroe County Rochester, N. Y.)

Schools

"The Nation's School Building Needs" is the subject of the January, 1935, issue of the *Research Bulletin* of the National Education Association, published by the Research Division. The sharp decline in school-building construction at a time of increasing enrolments, and the inadequate, unsanitary, crowded conditions in many schools are emphasized. In the nation as a whole school-building construction lagged behind actual needs from 1918 to 1930, and the average annual expenditure per city began to decline in 1926, long before the depression. "No better public works project is available than the construction of needed school buildings." 36 pp. Charts, tables. 25c. (Apply to Research Division, National Education Association, 1201 Sixteenth St., N. W., Washington, D. C.)

Government and Administration

The West Virginia League of Municipalities is issuing a mimeographed News Bulletin. The Secretary of the League is Hume K. Nowlan, City Manager of Hinton, whose spirited municipal reports have been mentioned from time to time in THE AMERICAN CITY. Vol I, No. 2, of the Bulletin appeared on February 20, 1935, and repeats the high purpose of the League to link together the large city and the small city through this organization "in establishing, maintaining, and improving relations with the state by continuous contact in the capital city." Points of needed legislation for the benefit of municipalities are emphasized. (Apply to the League, Box 427, Charleston, W. Va.

Motion Pictures

The "Motion Picture Censors' and Reviewers' Manual" has been compiled, arranged and edited by Frederick Rex, Librarian, Municipal Reference Library, Chicago, Ill. It is published in a pamphlet of 34 photo offset pages, by the Home Study Circle, P. O. Box Four, Hubbard Woods, Ill. (Copyright, 1934.) It is a handbook for the instruction and use of state and city boards of censors of motion pictures, producers and distributors, citizen motion picture councils, Better Films committees, women's clubs, and parent-teacher organizations. It contains the Standards of the Motion Picture Producers and Distributors of America; of the National Board of Censorship of Motion Pictures; and of the state censoring bodies of Kansas, Maryland, New York, and Pennsylvania; also of the censoring bodies in Chicago, Pasadena, and Portland, Ore. It gives the Chicago ordinance regulating exhibition and censorship; specimen questions of previous civil service examinations for censor of motion pictures; and an outline of duties and minimum qualifications of censor of motion pictures. (Apply to the Home Study Circle.)

Climate

"Comparative Statistics on the Climate of 36 Cities in the United States in the Year 1934," based upon Annual Meterological Summaries issued by the U. S. Weather Bureau, are given in 5 mimeographed sheets, representing a compilation by Frederick Rex, Municipal Librarian, Chicago, Ill. (Apply to the Library.)

Municipal Government

The Richmond First Club, of Richmond, Va., has published a 150-page copyrighted pamphlet, "A Study of Richmond City Government." Daily installments of the report as printed in *The Richmond News Leader* are reproduced in the pamphlet. They cover governmental costs; sources of municipal income; city election costs; list of public offices and employees' positions; the mayor's power and responsibilities; the courts and their work; the city's fee system; its real estate appraisal methods; costs and services of the department of public works and its subdivisions; harbor and sewer activities; the public utilities; police, and fire departments; traffic control and alarm systems; welfare activities; schools, library; and various discussions of principles and policies in administration. Charts. (Apply to the Richmond First Club.)

Economic Organization

"America's Capacity to Produce" and "America's Capacity to Consume" is a digest of the studies made by the Brookings Institution, Washington, D. C., under a grant from the Maurice and Laura Falk Foundation of Pittsburgh, Pa., and published in 1933 and 1934. It is a reprint in a pamphlet of 60 pages, of Part Two of the Report of the Foundation for 1933 and 1934. The general title of the study is "The Distribution of Wealth and Income in Relation to Economic Progress," and its purposes are "to lay a solid, factual basis for understanding the problem; to locate as definitely as possible the sources of difficulty in our present methods of distributing wealth; to assess the magnitude of whatever maladjustments are found to exist; and to point out the major lines of adjustment which seem to promise to be most useful in bringing about a more efficient utilization of our productive powers." (Apply to the Falk Foundation, Farmers Bank Bldg., Pittsburgh, Pa.)

County Government

The Governor's Commission on County Government submitted to the Governor of Ohio in December, 1934, a report on "The Reorganization of County Government in Ohio." It is published in a printed report of 190 pages. The Commission proposes three forms of organization as best adapted to the needs of Ohio counties: the county-manager plan; the limited executive plan; and the elective executive plan. It also recommends legislation permitting various combinations of offices in counties not choosing to adopt a complete reorganization; and improvements in procedures; record systems, etc. (Apply to the Commission, Columbus, Ohio.)

Taxation and Finance

Some Recent Publications

"New Sources of Municipal Revenue."—By A. M. Hillhouse. Municipal Finance Officers Association. 1935. 74 pp. $1.00.

"Improved Assessment Technique."—National Municipal League. December, 1934. 8 pp.

"The Five-Year Trend in Tax Delinquency, 1930-34."—By Frederick L. Bird. Municipal Service Department, Dun & Bradstreet, Inc. February, 1935. 24 pp. mimeographed.

"Municipal Accounting Terminology for State, Municipal and Other Local Governments."—Issued by National Committee on Municipal Accounting, Chicago. Tentative draft. March, 1935. 34 photo offset pp.

County Finances in the State of Washington, with Particular Attention to the Financial Problems of County Welfare Activities and Unemployment Relief.—By Joseph P. Harris, University of Washington Press. February, 1935. 374 pp.

"A Budget Manual for Texas Cities."—By Roscoe C. Martin. Municipal Studies, No. 1, University of Texas. December 1, 1934. 131 pp. "A Manual of Tax Collection Procedure for Texas Cities."—By Lyndon E. Abbott. Municipal Studies, No. 2, University of Texas. February, 1935. 107 pp. Free.

"Sales Taxes."—By Carl L. Nelson, Gladys C. Blakey and Roy G. Blakey. The League of Minnesota Municipalities. Publication 48. February, 1935. 88 pp. $1.00.

"A Study of Certain Problems Relating to the Nevada Tax System."—By Milton R. Howard, University of Nevada Agricultural Experiment Station. Bulletin No. 137. 1935. 28 pp.

"Inheritance Taxes."—By Glen R. Treavor and Roy G. Blakey. The League of Minnesota Municipalities. Publication 47. February, 1935. 48 pp. 50c.

"Constitutional Tax Rate Limitation for Illinois."—Illinois Tax Commission. Special Report No. 2. 1934. 152 pp.

"Boston's City Finances of 1924-1934 and the Financial Outlook for 1935."—Boston Municipal Research Bureau. February 27, 1935. 49 pp. mimeographed.

"Motor Vehicle Taxation in New Jersey, With Special Reference to Equity of Present Taxes on Heavy Vehicles."—Report by William D. Ennis to New Jersey Taxpayers' Association at the Request of Associated Railroads of New Jersey. January, 1935. 199 pp.

"Publicity Handbook. Detailed Suggestions for the Publicity Chairman of a Local Pay Your Taxes Campaign Committee."—National Municipal League. January, 1935. 17 pp. mimeographed.

"Discriminatory Legislations Affecting Retailers."—Contains information concerning chain store taxes. Domestic Distribution Department, Chamber of Commerce of the United States. Revised December, 1934. 22 pp.

"The Collection of Taxes Levied on Real and Personal Property in Wisconsin."—Prepared by Philip Haberman. Issued by League of Wisconsin Municipalities. March, 1935. 14 pp. 25c.

"A Study of Tax Delinquency in the Second Ward of Detroit With Special Reference to Apartment House Properties."—By Virginia L. Eyre. Social Science Research Council of Wayne University Report No. 3. Detroit Bureau of Governmental Research Report No. 139. 1935. 22 pp.

"Campaign Manual. Suggestions and Methods for Reducing Tax Delinquency by Organizing a Local *Pay Your Taxes Campaign*."—Revised February, 1935. National Municipal League. 22 pp. mimeographed.

"Assessments of Real Estate and Personal Property in Cook County, Illinois, for the Tax Years of 1931-1932-1933."—Report on Administrative Reorganization and Improvements in Assessment Procedures, Standards and Practices. By J. L. Jacobs, Cook County Assessor. November, 1934. 178 pp.

Recent Publications of the Tax Policy League (309 East 34th St., New York)

PAMPHLETS:

Report of Committee on Tax Policy to Aid Economic Recovery and Permanent Prosperity. 10c.

The House Owner and the Sales Tax. 25c.

Taxbits (mimeographed bulletin)

Delinquency Tax Legislation. 25c.
What Government Costs. 25c.
Salient Facts of School Finance. 25c.
Overhauling State Revenue Systems. 25c.
Unemployment Relief and Its Financing. 40c.
Lotteries—A Mediaeval Throwback. 25c.
Assessing Land and Improvements. 25c.
Cluttering Up State Constitutions. 25c.
Recent Fiscal Policies of Certain States (papers presented at 1934 meeting). 50c.
Current Problems of State Finance (papers presented at 1934 meeting). 25c.
The Extravagant Hinterland of Government. 25c.

Other Reports Received

CHICAGO, ILL.—Chief Engineer's Budget Report on Engineering Work, 1935. 88 pp.

FLINT, MICH.—Annual Report of the Sewage Treatment Plant, 1934. 58 pp., with inserts.

FREDERICKSBURG, VA.—Annual Report of City, 1934. 64 pp.

HENNEPIN COUNTY, MINN.—County Auditor's Financial Statement, 1934. 53 pp.

ST. LOUIS, MO.—Annual Report, Board of Commissioners, Tower Grove Park, 1934. 14 pp.

WASHINGTON, D. C.—Children's Bureau, U. S. Department of Labor. Juvenile—Court Statistics and Federal Juvenile Offenders, 1932. 129 pp.

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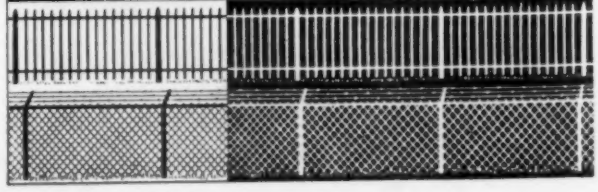

CONVENTIONS—WHEN AND WHERE

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

APRIL 10-11.—SPRINGFIELD, ILL.
American Water Works Association—Illinois Section—Annual convention. (Hotel St. Nicholas.) Secretary-Treasurer, A. E. Skinner, The Pitometer Co., 5311 Kenmore Avenue, Chicago, Ill.

APRIL 11-12.—ATLANTIC CITY, N. J.
American Water Works Association—Four States Section. Annual meeting. Secretary-Treasurer, C. H. Becker, 400 Chestnut Street, Philadelphia, Pa.

APRIL 12-13.—HELENA, MONT. (75)
American Water Works Association—Montana Section. Annual meeting. Secretary, Herbert B. Foote, State Board of Health, Helena, Mont.

APRIL 16-18.—FAYETTEVILLE, ARK.
Joint meeting. Arkansas Water and Sewage Works Conference. Secretary, Harrison Hale, Chemistry Department, University of Arkansas, Fayetteville. *Oklahoma Water and Sewage Conference.* Secretary-Treasurer, H. J. Darcy, State Sanitary Engineer, Oklahoma City, Okla.

APRIL 25-26.—KANSAS CITY, MO.
Missouri Association of Public Utilities. Annual convention. (President Hotel.) Secretary, Jesse Blythe, Merchants Bank Building, 101 West High Street, Jefferson City, Mo.

APRIL 27.—SALEM, N. J.
South Jersey Association of Water Superintendents. Regular meeting. Secretary, Walter Spencer, 2707 Bethel Avenue, Merchantsville, N. J.

APRIL 29-MAY 2.—WASHINGTON, D. C.
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, 1615 H Street, N. W., Washington, D. C.

APRIL 29.—CAMBRIDGE, MASS. (100)
New England Sewage Works Association. Spring meeting. Secretary, F. W. Gilcreas, Room 409, 14 Beacon Street, Boston, Mass.

MAY 2-3.—WASHINGTON, D. C. (500)
National Rivers and Harbors Congress. Secretary, Fred D. Beneke, 708 Earl Building, Washington, D. C.

MAY 6-10.—CINCINNATI, OHIO.
American Water Works Association. Annual convention. (Hotel Netherland Plaza.) Secretary, Beekman C. Little, 29 West 39th Street, New York.

MAY 6-7.—BOSTON, MASS.
Massachusetts Safety Conference. Annual convention. (Hotel Statler). Secretary, Lewis E. MacBrayne, 6 Beacon Street, Boston, Mass.

MAY 9-10—CENTRALIA, WASH. (200)
Association of Washington Cities. Annual convention. Secretary, Russell W. Barthell, University of Washington, Seattle, Wash.

MAY 9-11.—SAVANNAH, GA. (900)
Association of County Commissioners of Georgia. Annual convention. Acting Secretary-Treasurer, Tate Wright, Athens, Ga.

MAY 13-16.—ATLANTA, GA.
National Fire Protection Association. Annual convention. (Atlanta Biltmore Hotel.) Managing Director, Franklin H. Wentworth, 60 Batterymarch Street, Boston, Mass.

MAY 16-18.—LEWISTON, IDAHO.
American Water Works Association—Pacific Northwest Section. Annual meeting. Secretary, Ernest C. Willard, 720 Corbett Building, Portland, Ore.

MAY 16-17.—ANNAPOLIS, MD. (125)
Maryland-Delaware Water and Sewerage Association. Annual conference. Secretary, A. W. Blohm, 2411 North Charles Street, Baltimore, Md.

MAY 17-18.—URBANA-CHAMPAIGN, ILL. (100)
Illinois Association of Sanitary Districts. Annual meeting. Secretary-Treasurer, G. H. Radebaugh, Urbana-Champaign, Ill.

MAY 20-23.—NEW YORK. (900)
National Association of Purchasing Agents. Annual convention. (Waldorf-Astoria Hotel.) Secretary-Treasurer, G. A. Renard, 11 Park Place, New York.

MAY 20-22.—CINCINNATI, OHIO.
Joint Conference on Planning. American City Planning Institute. Secretary, Howard K. Menhinick, Robinson Hall Annex, Cambridge, Mass. *National Conference on City Planning.* Secretary, Flavel Shurtleff, 130 East 22d Street, New York. *American Society of Planning Officials.* Executive Director, Walter H. Blucher, 850 East 58th Street, Chicago, Ill. *American Civic Association, Inc.* Executive Secretary, Miss Harlean James, 901 Union Trust Building, Washington, D. C.

MAY 20-21.—HARRISBURG, PA. (100)
Pennsylvania Association of Planning Commissioners. Annual convention. Secretary-Treasurer, Arthur Cassell, City Planning Commission, Allentown, Pa.

MAY 24-25.—POUGHKEEPSIE, N. Y.
New York State Sewage Works Association. Spring meeting. Secretary-Treasurer, A. S. Bedell, Albany, N. Y.

MAY 27-31.—INDIANAPOLIS, IND.
Building Officials' Conference. Annual convention. Secretary-Treasurer, William F. Hurd, Commissioner of Buildings, Indianapolis, Ind.

MAY 27-28.—ALLENTOWN, PA. (250)
Pennsylvania State Association of Township Commissioners. Annual convention. Secretary-Treasurer, H. A. Fritschman, Eagle and Darby Roads, Upper Darby, Pa.

JUNE 3-5.—TORONTO, ONT. (450)
Canadian Public Health Association. Annual meeting. General Secretary, Dr. J. T. Phair, Spadina House, Toronto, Ont.

JUNE 3-5.—SYRACUSE, N. Y.
Conference of Mayors and Other Municipal Officials of the State of New York. Annual meeting. Secretary, William P. Capes, City Hall, Albany, N. Y.

JUNE 4-7.—WASHINGTON, D. C.
National Conference on Weights and Measures. Annual conference. Secretary, F. S. Holbrook, Bureau of Standards, Washington, D. C.

JUNE 4-7.—ST. LOUIS, MO. (350)
Smoke Prevention Association. Annual convention. Secretary, Frank A. Chambers, 1411 City Hall Square Building, Chicago, Ill.

JUNE 7-8.—MONTREAL, QUE. (500)
American Public Welfare Association. Annual conference. Director, Frank Bane, 850 East 58th Street, Chicago, Ill.

JUNE 8-9.—MONTREAL, QUE. (150)
Community Chests and Councils, Inc. Annual meeting. Executive Director, Allen T. Burns, 1815 Graybar Building, New York.

JUNE 9-15.—MONTREAL, QUE. (5,000)
National Conference of Social Work. Annual conference. General Secretary, Howard R. Knight, 82 North High Street, Columbus, Ohio.

JUNE 10-15.—LOS ANGELES, CALIF.
Institute of Government. Annual session. Executive Secretary, Walter E. Sykes, 3551 University Avenue, Los Angeles, Calif.

JUNE 12-14.—MANKATO, MINN. (450)
League of Minnesota Municipalities. Annual convention. Executive Secretary, Morris B. Lambie, Director of the Extension Division, University of Minnesota, Minneapolis, Minn.

JUNE 14-15.—ATLANTIC CITY, N. J. (75)
Conference of State and Provincial Health Authorities of North America. Annual. Secretary, Dr. A. J. Chesley, State Board of Health, St. Paul, Minn.

JUNE 20-21.—WATERTOWN, S. DAK. (250)
League of South Dakota Municipalities. Secretary, Dr. G. R. Breckenridge, University of South Dakota, Vermilion, S. Dak.

JUNE 23-30.—PRAGUE, CZECHOSLOVAKIA.
International Housing Association. Congress. General Secretary, Prof. Franz Schuster, Hansa-Allee 27, Frankfort a/M, Germany.

JUNE 24-29.—DENVER, COLO.
American Library Association. Annual conference. Secretary, Carl H. Milam, 520 North Michigan Avenue, Chicago, Ill.

JUNE 24-28.—DETROIT, MICH.
American Society for Testing Materials. Annual meeting. (Book-Cadillac Hotel.) Secretary-Treasurer, C. L. Warwick, 260 South Broad Street, Philadelphia, Pa.

JUNE 24-26.—STATE COLLEGE, PA. (150)
Pennsylvania Sewage Works Association. Annual conference. Secretary, L. D. Matter, Kirby Health Center, Wilkes-Barre, Pa.

JUNE 25-26.—LOVELAND, COLO. (75)
Colorado Municipal League. Annual meeting. Secretary-Treasurer, Don C. Sowers, University of Colorado, Boulder, Colo.

JUNE 25-27.—NEW BEDFORD, MASS.
New England Association of Fire Chiefs. Annual convention. (Hotel New Bedford.) Secretary-Treasurer, John W. O'Hearn, 99 Main Street, Watertown, Mass.

JUNE 26-28.—STATE COLLEGE, PA.
Pennsylvania Water Works Operators' Association. Annual convention. Secretary-Treasurer, I. M. Glace, 506 South Office Building, State Capitol, Harrisburg, Pa.

JUNE 27-28.—CALGARY, ALTA. (100)
Union of Alberta Municipalities. Annual convention. (Hotel Palliser.) Secretary-Treasurer, J. E. Fraser, Wetaskiwin, Alta.

JUNE 30.—JULY 5.—DENVER, COLO. (6,000)
National Education Association of the United States. Annual meeting. Secretary, Willard E. Givens, 1201 16th Street N. W., Washington, D. C.

JULY 11.—NORTH LITTLE ROCK, ARK.
Arkansas Municipal League. Annual meeting. President, Mayor U. E. Moore, North Little Rock, Ark.

JULY 16-20.—LONDON, ENGLAND.
International Federation for Housing and Town Planning. Congress. Organizing Secretary, H. Chapman, 25 Bedford Row, London, W. C. 1, England.

AUGUST 4-11.—EVANSTON, ILL.
National Institute for Commercial and Trade Organization Executives. Annual session. (Northwestern University.) Secretary, John N. Van der Vries, 607 First National Bank Building, Chicago, Ill.

AUGUST 22-23.—PITTSBURGH, PA.
American Water Works Association—Central States Section. Annual meeting. Secretary, H. K. Nelson, 2435 Koppers Building, Pittsburgh, Pa.

AUGUST 28-30.—PHILADELPHIA, PA.
National Shade Tree Conference. Annual convention. Secretary-Treasurer, Dr. R. P. White, New Jersey Agricultural Experiment Station, New Brunswick, N. J.

SEPTEMBER 19-20.—KENOSHA, WIS. (600)
League of Wisconsin Municipalities. Annual convention. Secretary, Frederick MacMillan, 114 North Carroll Street, Madison, Wis.

SEPTEMBER 24-27.—KNOXVILLE, TENN.
International Association of Chiefs of Police. Annual convention. (Hotel Andrew Johnson.) Secretary, George Black, Wilmington, Del.

OCTOBER 7-10.—MILWAUKEE, WIS.
American Public Health Association. Annual meeting. Acting Executive Secretary, Dr. Kendall Emerson, 50 West 50th Street, New York.

OCTOBER 14-16.—CINCINNATI, OHIO.
American Society of Municipal Engineers. International Association of Public Works Officials. Joint conference. (Netherland Plaza Hotel.) Executive Director, Donald C. Stone, 850 East 58th Street, Chicago, Ill.

OCTOBER 14-17.—HOUSTON, TEXAS.
American Water Works Association—Southwest Section. Annual convention. Secretary-Treasurer, Lewis A. Quigley, Fort Worth, Texas.

OCTOBER, THIRD WEEK OF (TENTATIVE).—ATLANTIC CITY, N. J.
Pennsylvania Water Works Association. Annual meeting. (Haddon Hall.) Secretary, Dr. F. Herbert Snow, 327 Telegraph Building, Harrisburg, Pa.

OCTOBER 23-26.—SAN DIEGO, CALIF.
American Water Works Association—California Section. Annual convention. Secretary-Treasurer, J. E. Phillips, 207 South Broadway, Los Angeles, Calif.

NOVEMBER 6-8.—DES MOINES, IOWA.
American Water Works Association—Missouri Valley Section. Annual meeting. Secretary, Earl L. Waterman, University of Iowa, Iowa City, Iowa.

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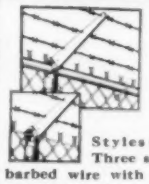
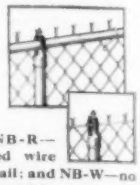


Styles: 3B-R—Three strands of barbed wire with top rail; and **3B-W**—three strands of barbed wire without top rail.



Styles: NB-R—No barbed wire with top rail; and **NB-W**—no barbed wire without top rail. Note: Where no top rail is used a No. 6 gauge tension wire is provided.

Styles: 5B-R—Five strands of barbed wire with top rail; and **5B-W**—five strands of barbed wire without top rail.

Pierce Power Rollers
for Street and Park Maintenance

Cities all over the United States and Canada are using Pierce Rollers for light construction work and for maintenance of streets and alleys. These Rollers are also ideal for leveling drives in parks and for rolling park lawns. They offer the most practical means of keeping tennis courts, playgrounds, race tracks, athletic fields and airports in proper condition.

Built in three serviceable models: ¾, 1½-2, and 3-ton. You save money when you buy Pierce Rollers. Write for information.

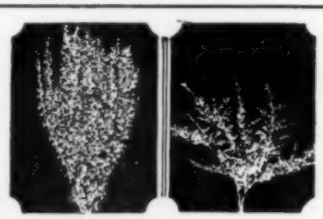
The Pierce Governor Company
Anderson, Indiana

1 sprinkling lasts 1 year

1 in 1

PENETRATING the roots and killing the growth completely, one sprinkling of Dolge Weed-Killer usually keeps your drives, walks, gutters, tennis courts clear the whole year. That's what 1-in-1 means! Made from a new formula, this super-strength chemical gives a quicker, more complete kill. Goes farther. Used on so many large-scale operations. And Dolge Weed-Killer, eradicates poison-ivy—other deep-rooted growth, too. Dolge makes a full line of building and ground maintenance supplies. Write!

THE C. B. DOLGE COMPANY . . . . . .
MAIN OFFICE AND LABORATORIES **WESTPORT, CONNECTICUT**



Average 2 year old TRUE HEDGE plant without trimming

Average 2 year old Common Barberry plant without trimming

WHEN you may have Columnberry Hedging

WHY consider old-time Barberry

Practically no trimming necessary. Saves you 2 to 3 years work and waiting for hedge effect. Truehedge is cheaper in the long run, superior in beauty, has better foliage, is perfectly hardy, drought resisting and rust immune.

THE COLE NURSERY CO.

Introducers of
"Truehedge Columnberry"
U. S. Plant Patent No. 110
GROWERS ON 700 ACRES

Ornamental Shade trees, shrubs, evergreens, perennials, roses, fruits. In fact

"EVERYTHING THAT'S GOOD AND HARDY"

Price List on Request

PAINESVILLE OHIO

NEWS AND ILLUSTRATIONS

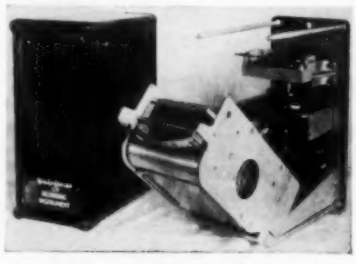
Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

Illinois Company to Make Corrugated Metal Pipe

The Illinois Corrugated Culvert Co., Peoria, Ill., has been organized to fabricate and sell Toncan iron corrugated metal pipe, sectional plate pipe and arches throughout the state of Illinois. A modern culvert fabricating plant is under construction at Peoria, but pending its completion shipments are being made from Danville, where the new company is operating the plant formerly owned by the Canton Culvert Co., Division of the Republic Steel Corporation.

An Electric Position Transmitter and Recorder

A duplicate position telemeter system for indicating and recording at a distance the positions of mechanisms such as bridges, gates, valves or the water level in reservoirs has been announced by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. The type GH position recorder is assembled in a rectangular case for switchboard panel mounting. An improved duplicate position type of motor operates a direct-acting pen which records on a strip-type chart all variations in the position of remotely associated mechanisms operating a motor-type transmitter.



THE SIMPLE RECEIVING END OF THE WESTINGHOUSE DUPLICATE POSITION TELEMETERING SYSTEM

Cut-in Connections for Sewers

A light cast iron fitting with bell-and-spigot ends for connecting a house service with a main sewer pipe without the necessity of placing a Y-branch or T-branch in the sewer line has been developed by Joseph G. Pollard Co., Inc., 142 Ashland Place, Brooklyn, N. Y. The M-D cut-in connection is made for use in both terra cotta and concrete pipe sewers of all sizes and for house services of either terra cotta or cast iron pipe of the various diameters usually required. It is furnished for making either 90 degree or 45 degree connections.

In making a connection of this type, the fitting is placed against the pipe at the required vertical angle, and a chalk mark is made where the cut is to be. Then the pipe is scored along the chalk line with a cold chisel and a light hammer. Following this, a hole is broken through the pipe with the ball end of the hammer at the center of the scored circle. The hole is enlarged by breaking away small pieces until it coincides with the scoring. The cut-in fitting is then inserted so that the stops, which must be in line with the longitudinal axis of the sewer, are against the pipe. The fitting is blocked in position by placing a brick or other support under the bell. A little jute is calked into the space back of the bead on the spigot end of the fitting, and finally the pipe and spigot end are encased in a concrete envelope 3 or 4 inches thick.

A 45-DEGREE CAST IRON SEWER PIPE CUT-IN

Power Rollers from ¾ to 3 Tons Weight

Three models of power rollers ranging from ¾-ton through 1½-2 tons to the largest size, 3 tons, are made by the Pierce Governor Co., Anderson, Ind., for leveling and rolling streets and drives, playgrounds, park lawns, park drives, athletic fields, airports and school grounds.

On all three models, known as the Three Bears, the clutch and brake pedal operate the same as in any standard automobile, and the gear shift lever is at the right of the driver. These rollers are easily loaded under their own power on trucks or trailers for quick transportation from one location to another.

The Three Bears have been found particularly suitable for patching bituminous or black-top pavements. All three models are painted a brilliant green trimmed in red, making them attractive in appearance.

The Baby Bear roller weighs ¾-ton and, while it is small, the operator does not have to sit in a cramped position. The Middle-sized Bear weighs 1½ tons with the rear roller drum empty, or it can be filled with water, increasing the weight to 2 tons. The Big Bear roller weighs 3 tons and, since the roller drum is almost solid iron, it does not permit adding water.

Outdoor Metering Saves Reader's Time

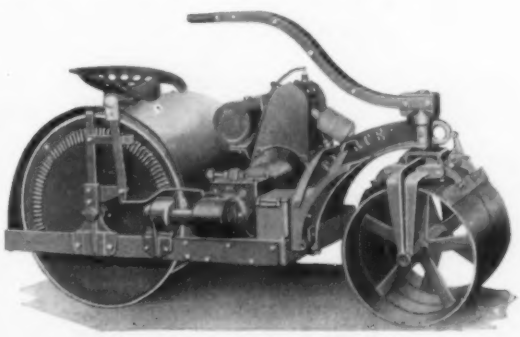
Outdoor electric metering is active in many parts of the country and in certain strata of the population. It is recognized as being thoroughly good practice at bungalow colonies, for example, where the residents are usually away, and the bungalow is locked against the meter reader, and goodbys do not always include the electric company.

Ordinary practice is to mount the meter on the side of the house. Another method is to mount the meter on the pole in the street, as is being done in Fremont, Nebr. This method may be applied to a circus—another transient that not only folds its tent and vamooses, but that carries with it skilled artists who know how to make meters behave.

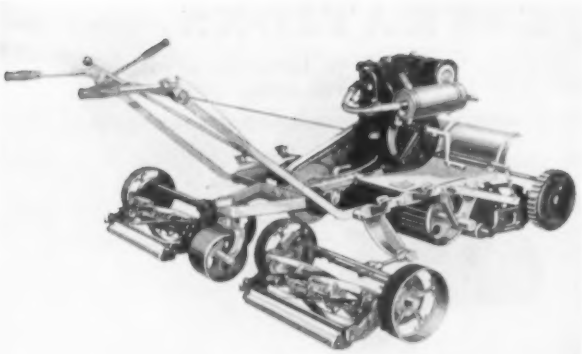
The meters are the socket type that fits into jaws and can be removed like an electric light plug. Developed by the Westinghouse Electric & Manufacturing Co., they are sold by Duncan Electric Co., Sangamo Electric Co., General Electric Co., and Westinghouse.

Pittsburgh Consultants Change Name

The firm name of The J. N. Chester Engineers, Clark Bldg., Pittsburgh, Pa., has been changed to Chester, Laboon, Campbell, Davis & Bankson. The firm will continue its practice of the various lines of sanitary and hydraulic engineering. J. N. Chester continues to serve as Senior Member of the firm.



THE "BABY BEAR" ROLLER



● HERE'S POWER and LONG LIFE—for LARGE CUTTING AREAS

It's the Ideal Master "Thirty"—with trailer units, cutting a total width of 64". For big cutting jobs, this mower will reduce costs by doing more work per day, and its rugged construction means years of good service.

Traction drive on all units insure smooth cutting. Where desired, trailer units can be detached in a jiffy. A practical, hard-working mower that will repay in added service its moderate cost. Designed particularly for big park jobs. Write for details and prices.

● HERE'S EASY HANDLING FOR NARROW CUTTING

Rubber air tires make the Victor "22" light on its feet. Narrow width makes it possible to cut in and around difficult places. Untiring to operate, and built to stand up under hard, constant service. A perfect team mate for the big Master "Thirty."

Write for Catalog and full details.

●IDEAL POWER LAWN MOWER CO.

400 Kalamazoo Street — Lansing, Michigan

Branches:

161 Vester Street, Ferndale (Detroit), Michigan

237 Lafayette Street New York City

Canadian Distributors:

AIKENHEAD HARDWARE, LTD.
17 Temperance Street, Toronto, Ont.

THE
"Murdock" Outdoor Drinking Fountain

(Anti-freezing)

Positively the most practical fountain for public service obtainable. Highly endorsed by over 800 municipalities alone.

Splendid for

PARKS, PLAYGROUNDS, ATHLETIC FIELDS, RECREATION CENTERS, OPEN SQUARES, PUBLIC STREETS

Write for complete information to

The Murdock Mfg. & Supply Co.

CINCINNATI, OHIO

Makers of outdoor water devices since 1853

Cut Mowing Costs . . . *with a* DETROIT MOTOR SCYTHE

● Here is the most economical and easily handled cutter on the market.

● It goes anywhere, cuts anything, and enables one man to do the work of four or more with hand scythes.

● It has a 36-inch sickle driven by a powerful one-cylinder gasoline motor and is mounted on a free running 30-inch wheel, allowing it to be backed up, pivoted sharply, or tilted up or down slopes similar to a wheelbarrow.

● It is now being produced by a recognized leader among mower manufacturers and during over four years of service, thousands of users have testified to its economy and dependability.

DETROIT HARVESTER CO.
5450 W. JEFFERSON AVE., DETROIT, MICH.

Write for prices and Bulletin No. 10

Complete assortment of general line of nursery products. Also large specimens of shade and ornamental trees and shrubs.

BIG TREES MOVED AND GUARANTEED

Consultations and Inquiries Invited

THE GREENING NURSERY CO.

MONROE - - - MICHIGAN

Born 1850 - - - - *Still Growing*

EVERWEAR OFFERS THE SAFEST MERRY-WAVE-STRIDE

Fully covered by patents which include the many exclusive safety features, this Merry-Wave-Stride insures complete safety to the children in your parks and recreation grounds. EverWear Merry-Wave-Stride gives more action and exercise.

You owe it to your children to install the safest equipment—Ever-Wear's Patented Stride. Ask for complete details.

USE SPRING RUBBER SAFETY SEATS FOR YOUR SWINGS

An ingenious arrangement of rubber and steel, patented by Ever-Wear, which eliminates all the hazards of former type swing seats.

This EverWear seat is soft, springy, resilient, has remarkable safety features, strength and durability. Priced low enough to meet your budgets. Write for details. Ask for complete new catalog.

THE EVERWEAR MFG. CO.

SPRINGFIELD, OHIO, U. S. A.

A MURDOCK FOUNTAIN IS A POPULAR OUTDOOR GATHERING PLACE ON WARM DAYS

Outdoor Bubble Fountains for Playgrounds

For outdoor use a drinking fountain should be made of outdoor materials. Bronze, brass and iron are the three metals which, for ages, have been used out-of-doors. They are the materials used by The Murdock Manufacturing & Supply Co., Cincinnati, Ohio, in the Murdock outdoor bubble font. These fountains are fitted with brass pipe and chromium-plated bronze bowl and bubbler head. They cannot freeze and are equipped with a self-closing valve which saves water and cannot be squirted by children, to the discomfort of passersby.

The pedestal is filagreed and painted green, harmonizing with the chromium-plated bronze bowl. The fixture is 34 inches high, the base 13 inches in diameter, and the bowl 12 inches in diameter. It may be equipped either with an angle stream for the bubbler head or a vertical bubbler.

New Busters with Low Air Consumption

A concrete buster which weighs 84 pounds and handles the hardest concrete breaking job, the thickest pavements and heavily reinforced walls has been announced by the Sullivan Machinery Co., 814 Wrigley Building, Chicago, Ill. This K-11 has a low air consumption, so that it runs at good operating pressures on a usual size portable air compressor.

Two smaller sizes, the K-10 weighing 77 pounds and the K-9 weighing 46½ pounds, are similarly adapted for lighter work. These busters are air-cushioned and mechanically cushioned with side-rod springs; the tools come out of the hole without stinging the runner's hands, the throttle valves fit the palm, and the exhausts shoot down and away, so there is no dust cloud at the runner's feet and no blast against his leg.

P. C. A. Appoints Fleming Manager New York Office

The Portland Cement Association has announced the appointment of E. M. Fleming as District Manager in charge of the New York Office, effective March 1. For the past six years, he has been Manager of the Highways and Municipal Bureau of the general office in Chicago.

Fleming joined the staff of the Association in 1926 as a field engineer in the Indianapolis district. In 1928 he was transferred to the general office and served as street engineer in the Highways and Municipal Bureau for one year prior to his appointment as Manager.

While Manager of the Highways and Municipal Bureau, he directed the Association's concrete road condition survey of over 6,000 miles of concrete roads in ten states. He also directed the construction of the Elmhurst cement-bound macadam test road, built by the Association to get data on the best methods of building this type of pavement.

To A. W. W. A. Convention Via the Kentucky Derby

The Transportation Committee of the Water Works Manufacturers Association, Howard W. Ford, Chairman, care of Pittsburgh-Des Moines Steel Co., 270 Broadway, New York, has announced that delegates to the American Water Works Association Convention in Cincinnati, May 6-10, 1935, may travel by special train via the Kentucky Derby.

The train will leave New York via the Pennsylvania Railroad on Friday, May 3, at 3:40 P.M., stopping at Newark, North Philadelphia and other principal points, arriving at Louisville, Ky., at 11:15 A.M. on Saturday, Derby Day. The sleepers will leave Louisville the same evening, ariving at Cincinnati at 11:30 P.M., Saturday, May 4.

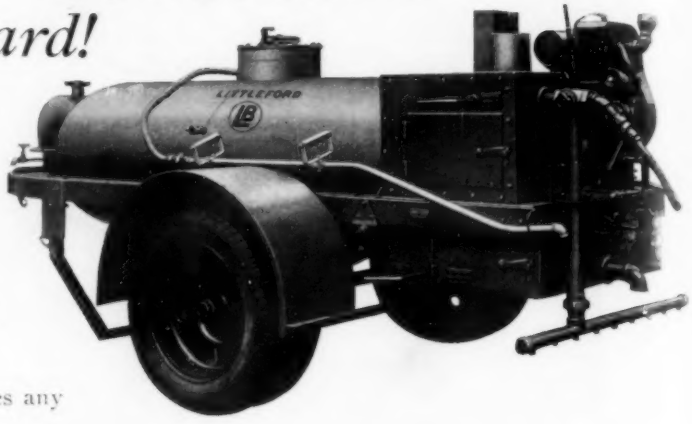
After luncheon in the dining car at Louisville, special busses will transfer the party to Churchill Downs, where grandstand box seats will be reserved, six in a box. At the end of the races the busses will carry the parties back to the special Pullman cars.

The round trip railroad fare from New York to Louisville, Cincinnati and return to New York with Pullman lower berth, busses to the race track and return, with an $8.80 box seat at the Derby, will cost $70.62. Meals in the dining car are extra.

A. W. W. A. EXHIBITORS

American Brass Co., Waterbury, Conn.
American Cast Iron Pipe Co., Birmingham, Ala.
THE AMERICAN CITY, New York City
The American Rolling Mill Co., Middletown, O.
Atlas Mineral Products Co., Mertztown, Pa.
Bingham & Taylor Corp., Buffalo, N. Y.
Birch Manufacturing Co., Chicago, Ill.
Builders Iron Foundry, Providence, R. I.
The Central Foundry Co., New York City
Chicago Bridge & Iron Co., Chicago, Ill.
Dorr Company, New York City
S. R. Dresser Mfg. Co., Bradford, Pa.
Eddy Valve Co., Waterford, N. Y.
Engineering News-Record, New York City
Ford Meter Box Co., Wabash, Ind.
Hersey Manufacturing Co., South Boston, Mass.
Hydraulic Development Corp., New York City
Industrial Chemical Sales Co., New York City
International Filter Co., Chicago, Ill.
Jenkins Bros., Bridgeport, Conn.
Johns-Manville Corp., New York City
Kennedy Valve Co., Elmira, N. Y.
Lead Lined Iron Pipe Co., Wakefield, Mass.
Lock Joint Pipe Co., Ampere, N. J.
Ludlow Valve Mfg. Co., Troy, N. Y.
M. & H. Valve & Fittings Co., Anniston, Ala.
McWane Cast Iron Pipe Co., Birmingham, Ala.
National Meter Co., Brooklyn, N. Y.
National Tube Co., Pittsburgh, Pa.
National Water Main Cleaning Co., New York
Neptune Meter Co., Long Island City, N. Y.
The Pardee Engineering Co., Long Island City
The Permutit Co., New York City
Phoenix Meter Co., Prince Bay, S. I., N. Y.
The Pitometer Co., New York City
Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.
Pittsburgh Equitable Meter Co., Pittsburgh, Pa.
Rensselaer Valve Co., Troy, N. Y.
Ross Valve Mfg. Co., Inc., Troy, N. Y.
The A. P. Smith Mfg. Co., East Orange, N. J.
S. Morgan Smith Co., York, Pa.
Thomson Meter Corp., Long Island City, N. Y.
Union Water Meter Co., Worcester, Mass.
U. S. Pipe & Foundry Co., Burlington, N. J.
The Vellumoid Co., Worcester, Mass.
Wailes Dove-Hermiston Corp., New York City
Wallace & Tiernan Co., Newark, N. J.
Water Works Engineering, New York City
Water Works and Sewerage, Chicago, Ill.
Western Gas Construction Co., Fort Wayne, Ind.
R. D. Wood & Co., Philadelphia, Pa.
Worthington-Gamon Meter Co., Harrison, N. J.

MAINTENANCE EQUIPMENT
takes a Step Forward!



Save on cost of bituminous material—use No. 101 and you stop paying package prices. Save on handling—take material to the job in No. 101 ready for application. No longer will you have to load a truck with drums to be distributed along the roadside.

The No. 101 Utility Spray Tank is our latest contribution to the highway industry. It is made in capacities from 300 to 800 gallons—mounted on two or four wheeled running gear. It has an air-cooled engine, Viking pump, heat flues and oil burners—handles any kind of bituminous material.

No. 101 may be fitted with as many Hand Spray Attachments as your crew can efficiently use—spray is individually controlled from the Spray Handle. The four-foot spray bar is merely supplementary but comes in mighty handy where light oiling is called for and on large skin patching jobs.

Let us tell you more about No. 101.

Write for complete information and prices. It will cost you nothing to learn all about this remarkable, low-cost maintenance unit.

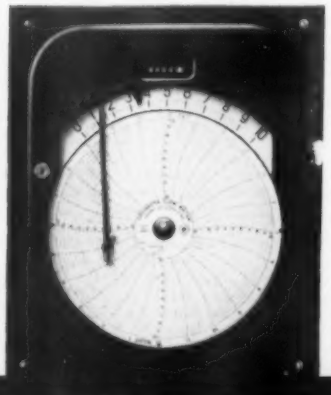
THE SIGN OF A GOOD HEATER — LB — LITTLEFORD BROS. CINCINNATI OHIO

LITTLEFORD
Road Maintenance Equipment
SINCE 1900

LITTLEFORD BROS. 500 E. PEARL ST. CINCINNATI, O.

COCHRANE ACCURACY IS GUARANTEED

THE Cochrane Electric Flow Meter is more than dependably accurate—it is **guaranteed.** Here is an instrument rugged enough to withstand the practical every-day requirements of water works usage, yet as sensitive to variations in flow as the finest laboratory instrument.



Galvanometer Null Principle

This two-fold purpose has been accomplished by incorporating a well-known method, not heretofore used for fluid flow measurement — the galvanometer null principle. Recognized universally as the most accurate means of measuring a force or quantity, this principle insures accurate registration without variation, lag, or hysteresis and makes possible the matchless accuracy of the Cochrane Electric Flow Meter.

Write for literature, either on this or the Cochrane Mechanical Flow Meter.

COCHRANE CORPORATION
Dept. AC.
17th & CLEARFIELD STREETS
PHILADELPHIA, PENNA.

COCHRANE
ELECTRIC FLOW METERS

Everything BULLARD in Safety

BULLARD

Battery of six 10 horsepower, doubleheader Bullard Sirens built for navigation protection on the new San Francisco-Oakland Bay Bridge. Our catalog describes all models. Write for it.

SIRENS

NATION-WIDE SERVICE

EAST	NEW YORK	W. S. Wilson Corporation	123 Varick St.
	PITTSBURGH	Safety First Supply Co.	Brady Building
	PHILADELPHIA	J. A. Hunt Co.	2036 Sansome St.
	CLEVELAND	Safety Clothing Co.	2904 Payne Ave.
	BRAINTREE, MASS.	Direct Sales Co.,	109 President Road
SOUTH	CHATTANOOGA, TENN.	C. D. Center Company,	Chattanooga Bank Building
MID-WEST	DETROIT	C. H. Dickson Company	2905 East Grand Boulevard
	CHICAGO	E. D. Bullard Company	215 South Leavitt Street
	GREEN BAY, WIS.	Safety Service Company	108 No. Quincy Street
	DULUTH	W. P. & R. S. Mars Company	324 W. Michigan Street
	HOUSTON	E. D. Bullard Company	1 Main Street
WEST	SAN FRANCISCO	E. D. Bullard Company	275 Eighth Street
	LOS ANGELES	E. D. Bullard Company	1329 South Olive Street
	SALT LAKE CITY	E. D. Bullard Company	1420 Yalecrest Avenue

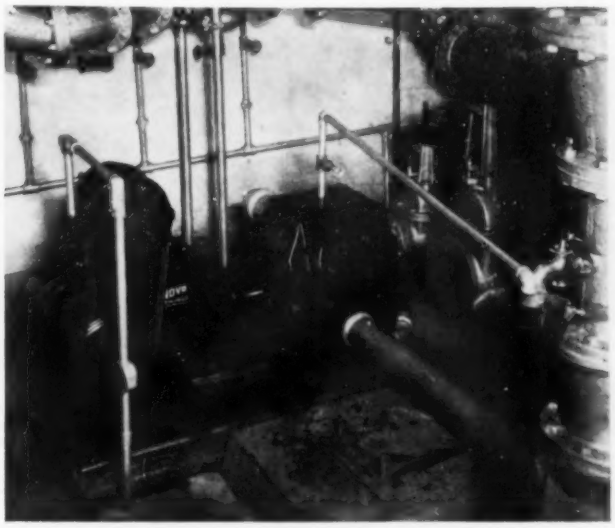
A New Easily Cleaned Sludge Pump

A horizontal double-acting sludge pump operating on the exclusive Novo roller ring principle has been announced by the Novo Engine Co., Lansing, Mich. The pump is designed to handle digested and undigested sludge and sewage with the least possible agitation. It will handle clinging substances such as rags, strings, sticks, and leaves without clogging, and is self-cleaning owing to the practically straight-line flow of the sludge in a downward direction.

There is a 2-inch drain plug in the bottom of the pump which can easily be connected by a pipe to a drain tile. A 1-inch plug in the top of the pump provides a hole to which water supply can be connected to flush clean water through the pump. By allowing the pump to operate a few strokes it can be entirely cleaned without the removal of the handhole plates or valves. Low power consumption is due to the fact that the plunger seal is maintained by two rubber rings which roll with the forward and backward motion of the piston, thus doing away with the friction caused by piston packing.

This type of pump has been in successful operation in the Grand Rapids sewage disposal plant for two years. Operating records show that this pump can handle 2,218,400 gallons of heavy undigested sludge over a period of 290 hours without valve damage. When the valves have to be replaced, it is only necessary to replace the valve itself and is not necessary to rebush and repin the clapper.

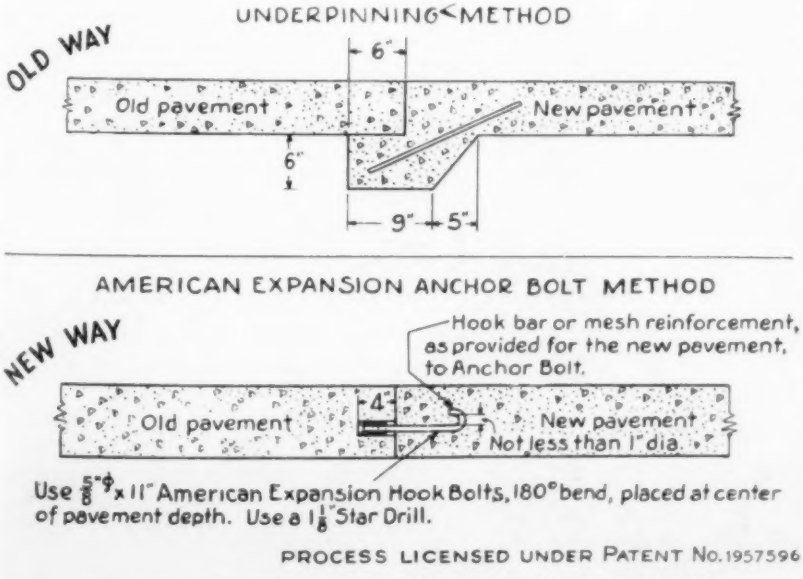
The triple V belt drive from the motor pulley to the pump pulley gives a noiseless, efficient transmission with easy variation of capacity by changing the V belt drive sheave.



A NOVO SLUDGE PUMP WHICH HAS SEEN TWO YEARS' SERVICE IN THE SEWAGE TREATMENT PLANT OF GRAND RAPIDS, MICH.

Expansion Anchor Bolts for Bonding Concrete

The usual method for repairing concrete roads is to chip out the disintegrated concrete, dig back under the edges about 1 foot deep and 1 foot under, and then pack the new concrete under the old. This requires about 15 to 18 inches of concrete in each new section. Expansion hook bolts made by the American Expansion Bolt & Manufacturing Co., 108-128 North Jefferson Street, Chicago, Ill., eliminate the need of using extra concrete. For repair work 90-degree-bend expansion anchors, 1, $\frac{5}{8}$ or $\frac{3}{4}$ x 11 inches and with a 4-inch bend, are set 4 inches deep on 2-inch centers in the edge of the old concrete. The time required for drilling the holes with an air hammer is less than one minute per hole. Lead slugs and swedging units make up the assembly, which insures a strong permanent bond between the old and the new concrete.


UNDERPINNING METHOD
OLD WAY
6"
Old pavement
New pavement
6"
9"
5"
AMERICAN EXPANSION ANCHOR BOLT METHOD
NEW WAY
Hook bar or mesh reinforcement, as provided for the new pavement, to Anchor Bolt.
4"
Old pavement
New pavement
Not less than 1" dia.
Use $\frac{5}{8}$"ϕ x 11" American Expansion Hook Bolts, 180° bend, placed at center of pavement depth. Use a $1\frac{1}{8}$" Star Drill.
PROCESS LICENSED UNDER PATENT No. 1957596

OLD AND NEW METHODS OF ANCHORING NEW CONCRETE TO OLD

Our Front Cover

We are indebted to the Portland Cement Association for the attractive cover on this issue of THE AMERICAN CITY. U. S. Route 9W runs along the west shore of the Hudson River on top of the Palisades in New Jersey, continuing as far north as Albany. The scenic beauty of the Palisades has long been appreciated by those sailing on the Hudson River, but few have an opportunity to see the view we show, taken from an airplane by Fairchild Aerial Surveys, Inc.

New Littleford Manager for New York Office

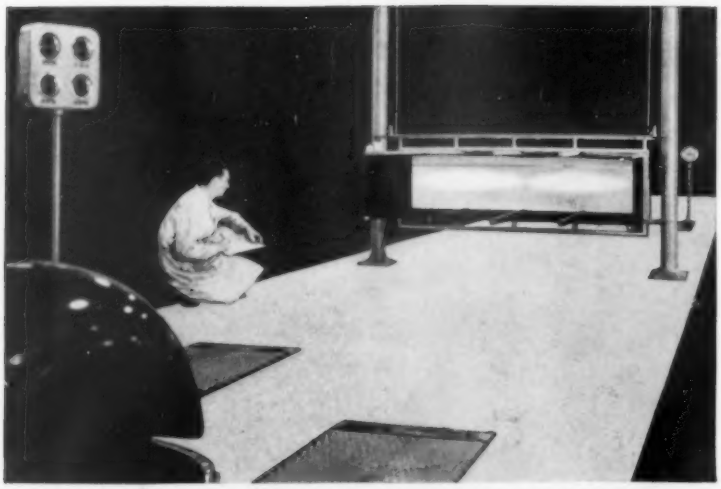
Hub F. Reynolds, who has been associated with Littleford Bros. for the past nine years, has been appointed Manager of the Littleford New York Office. Mr. Reynolds, who has spent four of his nine years in the Road Equipment Division, and is experienced in both road equipment and steel fabricating, moved into his new quarters at 10 East 43rd Street, New York, last month.

Copper and Brass Association Moves to New Offices

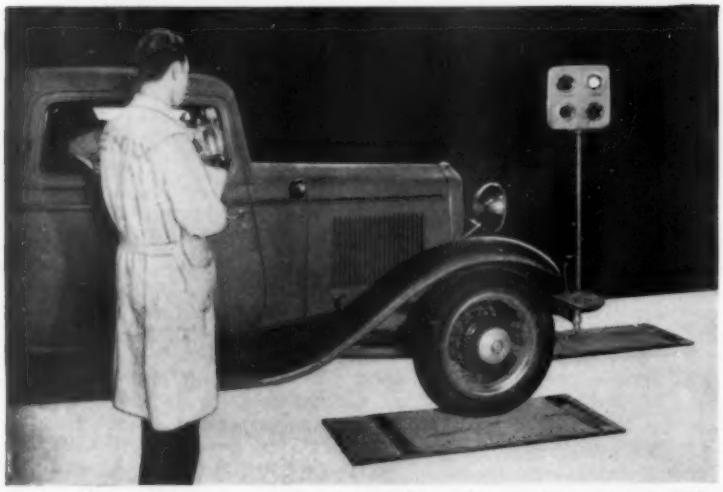
The Copper and Brass Research Association has announced the removal of its office as of April 1, 1935, from 25 Broadway to 420 Lexington Avenue, New York.

COPIES STILL AVAILABLE

Water-works officials and others may still secure copies of "Water Rates and Service Charges," containing detailed reports from 237 cities, for $1, from The American City, 470 Fourth Ave., New York.



Tests headlights for focus, level, intensity . . . on a screen . . . in daylight!



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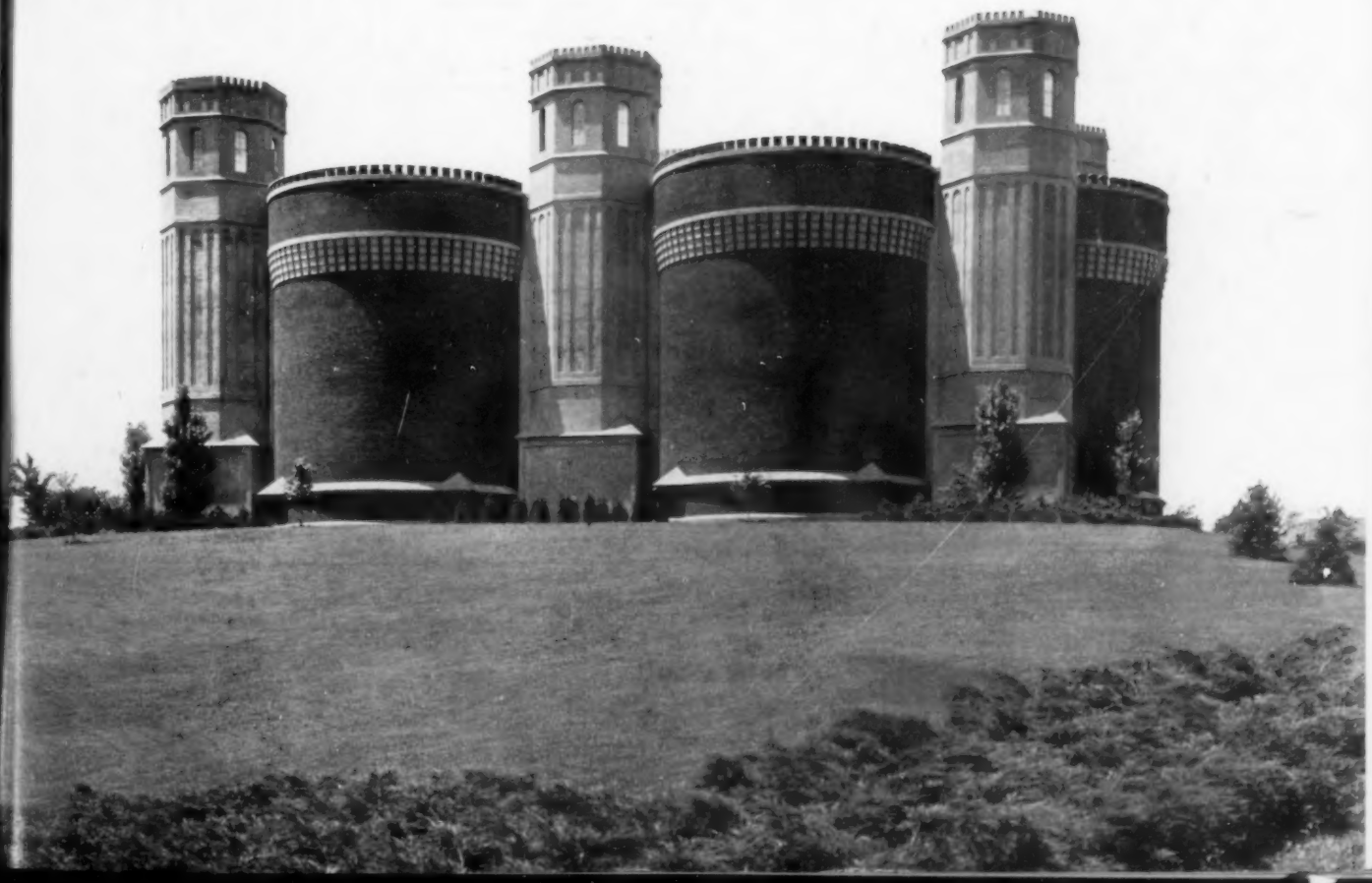
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